

NASA - CR-189370

NAS 5-26555

Version 4.1
May 1994

73P

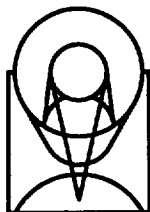
HST Archive Primer

(NASA-CR-189370) HST ARCHIVE
PRIMER, VERSION 4.1 (Space
Telescope Science Inst.) 73 p

N94-36230

Unclass

G3/89 0014035



SPACE
TELESCOPE
SCIENCE
INSTITUTE

Data Systems Operations Branch
Science Computing and Research Support Division
3700 San Martin Drive
Baltimore, Maryland 21218

Revision History

Version 3.0	January 1993, edited by Stefi Baum
Version 4.0	December 1993, edited by Kirk Borne
Version 4.1	May 1994, edited by Andy Fruchter and Stefi Baum

This document was prepared by the Space Telescope Science Institute under U.S. Government contract NAS5-26555. Users shall not, without prior written permission of the U.S. Government, establish a claim to statutory copyright. The Government and others acting on its behalf, shall have a royalty-free, non-exclusive, irrevocable, worldwide license for Government purposes to publish, distribute, translate, copy, and exhibit such material.

Send comments or corrections to:
Archive Hotseat, DSOB
Space Telescope Science Institute
3700 San Martin Drive
Baltimore, Maryland 21218
E-mail: archive@stsci.edu

REPORT DOCUMENTATION

3E

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE May 1994	3. REPORT TYPE AND DATES COVERED Contractor Report	
4. TITLE AND SUBTITLE Hubble Space Telescope Archive Primer (V. 4.1)			5. FUNDING NUMBERS 633	
6. AUTHOR(S) Editor: A. Fruchter and S. Baum				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Space Telescope Science Institute 3700 San Martin Drive Baltimore, MD 21218			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) National Aeronautics and Space Administration Washington, D.C. 20546-0001			10. SPONSORING/MONITORING AGENCY REPORT NUMBER CR-189370	
11. SUPPLEMENTARY NOTES Technical Monitor: R. Dilling, Code 633				
12a. DISTRIBUTION/AVAILABILITY STATEMENT Unclassified-Unlimited Subject Category 82 Report is available from the NASA Center for AeroSpace Information, 800 Elkridge Landing Road, Linthicum Heights, MD 21090; (301) 621-0390.			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) This version of the <i>HST Archive Primer</i> provides the basic information a user needs to know to access the HST archive via StarView, the new user interface to the archive. Using StarView, users can search for observations interest, find calibration reference files and retrieve data from the archive. Both the terminal version of StarView and the X-windows version feature a name resolver which simplifies searches of the HST archive based on target name. In addition, the X-windows version of StarView allows preview of all public HST data; compressed versions of public images are displayed via SAOIMAGE, while spectra are plotted using the public plotting package, XMGR. Finally, the version of StarView described here features screens designed for observers preparing Cycle 5 HST proposals.				
14. SUBJECT TERMS Hubble Space Telescope			15. NUMBER OF PAGES 65	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT Unlimited	



Table of Contents

What's in this Primer?	ix
------------------------------	----

Chapter 1

Introduction to the HST Archive	1
<i>Data in the Archive</i>	1
<i>Publication of HST Archival Research Results</i>	2
<i>Other Archives Containing HST Data</i>	3
<i>HST Archive Systems</i>	3
<i>StarView: A New User Interface</i>	4
<i>Retrieving Data</i>	4
<i>This Primer</i>	5
<i>User Support Services</i>	5
Support for Archival Research	5
Archive Hotseat	6
Visits	6
Questions and Comments	7

Chapter 2

Getting Started On the Archive System	9
<i>Logging In and Out</i>	10
Logging In.....	10
Logging Out	11
Reading the Archive News	11
<i>What You Can Do on the Archive Host Computers</i>	12
<i>Available Commands</i>	12
<i>Guest Users</i>	14
<i>Registering as a User</i>	14
<i>Using StarView</i>	15
<i>Getting Your Data</i>	15
<i>Converting File Formats</i>	16
<i>Using FTP</i>	17

*Documentation on the Telescope, Instruments,
and Data*..... 18
 HST Data Handbook..... 20
Using STSDAS to Analyze Your Data..... 20
Reading Text Files in the Documents Directory..... 20
 Manuals 21
 Forms..... 21
 Exposure Catalogs 21
Target Cross-Correlation Program..... 22
Distributed StarView..... 22

Chapter 3

StarView Tutorial 25
 StarView Tutorial..... 26
 Welcome Screen 27
 Command Usage and Screen Interaction..... 28
 Searching the Catalog 29
 Getting Help in StarView..... 33
 Preview 35
 Retrieving Datasets From the Archive 37
 Exiting StarView..... 43
 Getting Your Data 43
 Tutorial: Retrieving Calibration Reference Files..... 45
 Retrieving a File By Name 49

Chapter 4

Duplication Checking..... 51

Appendix A

Forms..... 57
 HST Archive Account Registration..... 58
 HST Archival Data Request 59
 HST Archival Research Visit Request..... 61

Index..... 63

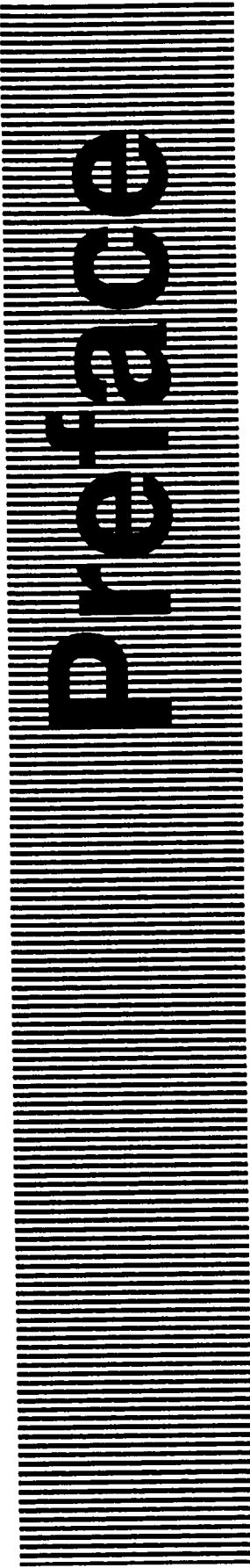
List of Figures

Figure 2.1: Using the readnews Command.....	11
Figure 3.1: Welcome Screen.....	28
Figure 3.2: Quick Search Screen	30
Figure 3.3: Quick SearchScreen With Constraints Entered	32
Figure 3.4: Quick Search Results Screen With Record Display	34
Figure 3.5: Quick Search Results Displayed on the Table Format Screen	35
Figure 3.6: Previewing a Dataset	36
Figure 3.7: Archive Retrieval Screen	38
Figure 3.8: Retrieval Request - File Options Screen	39
Figure 3.9: Retrieval Request- Media Options Screen	40
Figure 3.10: Retrieval System Messages	42
Figure 3.11: Sample Retrieval Status Screen.....	43
Figure 3.12: Converting File Formats Using vax2sun.....	44
Figure 3.13: Writing FITS Files	44
Figure 3.14: Retrieving Files Using FTP	45
Figure 3.15: Other Searches Screen.....	46
Figure 3.16: WFPC Reference Files - Search Specification Screen (Constrained)	47
Figure 3.17: WFPC Reference Files - Search Results Screen (With Results Displayed)	48
Figure 4.1: SIMBAD Coordinates Screen	52
Figure 4.2: Duplication Check Screen with SIMBAD Coordinates.....	53
Figure 4.3: Duplication Check Results Screen	54
Figure 4.4: Displaying an Abstract	55



List of Tables

Table 2.1: Commands Available on Archive Host Computers	13
Table 2.2: FTP Commands for Registered STDATA and STDATU Users	17
Table 2.3: FTP Commands for Guest Users	18
Table 3.1: Command Accelerators (Terminal Version)	29
Table 3.2: Relational Operators for Constraining Searches	33
Table 3.3: Average Data File Size per Instrument	40



What's in this Primer?

This version of the *HST Archive Primer* provides the basic information a user needs to know to access the HST archive via StarView, the new user interface to the archive. Using StarView, users can search for observations of interest, find calibration reference files and retrieve data from the archive. Both the terminal version of StarView and the X-windows version feature a name resolver which simplifies searches of the HST archive based on target name. In addition, the X-windows version of StarView allows preview of all public HST data; compressed versions of public images are displayed via SAOIMAGE, while spectra are plotted using the public plotting package, XMGR. Finally, the version of StarView described here features screens designed for observers preparing Cycle 5 HST proposals.

This manual is organized as follows:

- Chapter 1, "Introduction to the HST Archive," provides a basic introduction to the archive, describing the data in the archive, the archive system and interface, and the support provided by STScI for those using the HST archive.
- Chapter 2, "Getting Started on the Archive System," describes how users access the HST archive through the two archive host computers, STDATA and STDATU.
- Chapter 3, "StarView Tutorial," provides two tutorial sessions. The first shows you how to use StarView to select observations of interest, retrieve that data to the archive host computers and transfer it via FTP to your home computer. The second describes the use of the calibration reference screens in StarView which allow you to retrieve the best available calibration reference files with which to recalibrate your HST data.

PRECEDING PAGE BLANK NOT FILMED

PAGE VIII INTENTIONALLY BLANK

- Chapter 4, "Duplication Checking," provides a tutorial session using the <Duplication Check> and <Proposal Abstracts> screens for the preparation of Cycle 5 HST observing proposals. You can use the <Duplication Check> screen to search for potential conflicts between previously-approved HST observations (both planned and executed) and those that you are proposing. Archival researchers may also find this screen useful for preparing archival proposals.



Introduction to the HST Archive

In This Chapter..

Data in the Archive / 1
Publication of HST Archival Research Results / 2
Other Archives Containing HST Data / 3
HST Archive Systems / 3
StarView: A New User Interface / 4
Retrieving Data / 4
This Primer / 5
User Support Services / 5

Archival research is an important component of the Hubble Space Telescope (HST) program. Calls for proposals for funded archival research (by U.S. investigators) occur regularly with the HST Call for Proposals. Requests for archival data and visits to the Space Telescope Science Institute (STScI) for archival research projects that do not involve funding are considered year-round.

Data in the Archive

The HST archive contains science data from all completed HST observations and calibration files, such as flat fields, which are used to reduce these data. As of April 1994, nearly 6,000 different astronomical targets had been observed.¹ In addition to all the standard files sent to observers and all the calibration reference files, the archive contains engineering files that may be useful for diagnosing some questions about observations. The archive also contains the raw science data stream from HST, which is not generally useful

1. All data for observations obtained prior to March, 1992 have been reprocessed using updated calibration files and software so that both the data itself and the keyword information are of higher quality than the data originally sent to observers.

to astronomers, but can be used at STScI to regenerate the Space Telescope Science Data Analysis System (STSDAS) files containing raw science data. As data are archived, information about observations and the sources being observed is extracted from the data files and stored in an online catalog.

HST data become available to the astronomical community upon the expiration of a proprietary period. Most general observer (GO) and guaranteed time observer (GTO) observations have proprietary periods of a year, but some observations have shorter or longer proprietary periods. Nearly all calibration observations are made public immediately upon receipt. The archive catalog contains information about all observations that have been made with HST. However, only data that are public can be retrieved from the HST archive.

Publication of HST Archival Research Results

The results of investigations with HST archive data are generally published in the scientific literature. All publications based on these data must carry the following footnote:

“Based on observations made with the NASA/ESA Hubble Space Telescope, obtained from the data archive at the Space Telescope Science Institute. STScI is operated by the Association of Universities for Research in Astronomy, Inc. under NASA contract NAS 5-26555.”

If the archival research was supported by a grant from STScI, the publication should also carry the following acknowledgment at the end of the text:

“Support for this work was provided by NASA through grant number _____ from the Space Telescope Science Institute, which is operated by AURA, Inc., under NASA contract NAS 5-26555.”

One preprint or reprint of each refereed publication based on HST archival research must be sent to the following address:

Librarian
Space Telescope Science Institute
3700 San Martin Drive
Baltimore, MD 21218 USA

Other Archives Containing HST Data

Copies of the HST data and the archive catalog are maintained at the Space Telescope European Coordinating Facility (ST-ECF) in Garching, Germany and at the Canadian Astronomy Data Centre (CADC) in Victoria, Canada. There is a significant amount of collaboration and coordination between the ST-ECF and the CADC to assure that the data and the basic services we provide are similar. However, the archives are not identical. Therefore, European and Canadian astronomers should contact the ST-ECF or CADC for information about using their archive systems.

HST Archive Systems

The archive system in use at STScI today—the Data Management Facility (DMF)—was developed by STScI with help from ST-ECF and the CADC. Since launch, about one terabyte of data has been archived onto two-gigabyte optical disks. Data are currently being archived at a rate of about one gigabyte per day. In the past, users have worked with DMF using an interface known as *STARCAT*, which was developed by the ST-ECF, with support from the CADC and STScI. Currently, 200 to 400 non-STScI astronomers access the DMF archive catalog and retrieve 3 to 5 gigabytes of HST data each month. However, DMF was always intended as a prototype for a permanent archive system.

The permanent archive system—the Space Telescope Data Archive and Distribution Service (ST-DADS)—was delivered by Loral Aerosys to STScI in September 1993. A combined STScI and Loral team is currently completing the software needed to allow us to replace DMF. The transition from DMF to ST-DADS is underway, and we are now archiving data to DMF and ST-DADS in parallel. The new system should improve archive performance significantly. For example, when the transition is complete, we will be able to maintain nearly five years, instead of nine months, of HST data online in the ST-DADS optical disk jukeboxes. In addition, the data will be stored almost entirely in FITS formats instead of the VAX-specific GEIS format used by DMF.

We hope to finish the transition from DMF to ST-DADS in the autumn of 1994. However, users will continue to have access to DMF until all the major capabilities of DMF have been duplicated in ST-DADS and the data stored in DMF have been copied to ST-DADS. We expect to hide most of the hardware changes from users. However, during the transition, it will be especially important to read the news (type `readnews`) and information when you log in to the archive host machines.

StarView: A New User Interface

As part of the ST-DADS effort, STScI developed the StarView interface to the HST archive. Using StarView, you will be able to ask common questions about the data in the archive, determine whether the data are public, and retrieve the data that you want. StarView can be used from any standard terminal, or from an X-windows display system. The X-windows version of StarView not only provides a very intuitive means of accessing the HST Archive Catalog, but also allows you to preview a compressed version of the public data in the archives, which may help you determine whether the data are suited to your purposes. StarView can be run by logging into one of the guest accounts on the archive host machines, `stdata.stsci.edu` and `stdata.stsci.edu`, or, if your site has installed the distributed client-server version of StarView, you may be able to run the X-Windows version of StarView locally. (More details on the client-server software can be found in “Distributed StarView” on page 22).

Retrieving Data

If you decide that you want to retrieve data, we need to establish a computer account for you. For us to do this, you will have to register as an archive user (see “Registering as a User” on page 14). Once you have an account, you will be able to retrieve public data by marking particular datasets and choosing where you want the data put—either on magnetic disk for you to retrieve electronically or on a magnetic tape for us to send to you.

To make sure that we can provide a reasonable level of service for all those who want to use the archive, we have had to establish quotas on the amount of data that you can retrieve. For retrievals to the archive host machines, the current size limit is 500 megabytes. If you want to retrieve larger amounts of data, you should ask for the data to be written to Exabyte or 9-track tape. We have also established cumulative quotas on the total amount of data any one person can retrieve. For archive researchers, the quota is currently set to 20 gigabytes. If you exceed your quota, contact the archive hotseat (see below) and we will (within limits) increase the quota you are allocated. Funded HST archive researchers can, of course, expect to have large enough quotas to retrieve all of the data specified in their archival research program.

Most people will retrieve data from the archive using StarView. However, it is also possible to ask for data by filling out a paper *Request for Archival Data* form. A copy of the form is provided in the appendix. You can find electronic versions of forms on the

archive host machines or request them from the archive hotseat (see "User Support Services" on page 5).

This Primer

The *HST Archive Primer* provides a short introduction to the HST Data Archives and to the use of the archive interface, StarView. A more detailed description of the archives can be found in chapters 5 through 10 of the *HST Archive Manual*. At present, however, the manual only describes the generic terminal version of StarView. The manual will be updated in the autumn of 1994 when the conversion of the archives from DMF to DADS is complete. Until then we again recommend that you occasionally log into the archive host machines and use the `readnews` command to check on new developments.

User Support Services

The Data Systems Operations Branch (DSOB) at STScI is committed to providing outstanding support to archive researchers. We provide assistance and advice on methods and strategies for finding information in the archives and provide a hotseat staff for researchers who have specific problems or questions about using the archive. Archive researchers who need extensive advice on search strategies or help analyzing their astronomical data can visit STScI.

Support for Archival Research

The Data Systems Operations Branch (DSOB) of STScI is responsible for the management, scientific and technical oversight, and operation of the HST archive. DSOB staff also support astronomers who wish to use public data from the HST archive for their own research. To provide assistance for archive researchers, the DSOB staff includes archive specialists (with bachelor or masters level degrees in physics or astronomy) and archive scientists (Ph.D astronomers). The support provided by DSOB includes:

- Answering specific questions about data in the archives and methods for retrieving that data.
- Providing advice on strategies for searching the archives.
- Responding to problems identified by users.
- Setting up accounts for users who wish to retrieve data.
- Writing data tapes for users.

- Providing support for users who visit STScI.

DSOB staff will not normally do an astronomer's archive search, generate requests for data, or reanalyze data from the archive. DSOB staff will provide assistance and documentation so that archive researchers can perform these tasks.

Archive Hotseat

You can obtain help or answers to any questions that you may have about the HST archive by sending e-mail to archive@stsci.edu, or by phoning (410) 338-4547 Monday through Friday, 9 a.m. to 5 p.m. Eastern time.

The hotseat staff will respond to questions concerning the StarView user interface, the archive and archive databases, and data tapes provided by STScI. Hotseat personnel establish the accounts needed to retrieve data from the archive. The hotseat staff will also provide advice concerning basic strategies, and will investigate and document all problem reports. The archive hotseat people may not always know how to solve a problem, but they are responsible for finding out who does know the answer and for continuing to work with you until the problem is resolved. All initial communication from the user community to the archive—both inside and outside of STScI—should be directed to the archive hotseat.

Visits

Archive researchers who need extensive advice on search strategies or help analyzing their archival data should visit STScI. To make sure that DSOB is able to provide the help needed during a visit and to set up the appropriate computer accounts, archive visits must be approved by the DSOB branch chief at least two weeks in advance. After a visit is approved, an archive specialist and an archive scientist will be assigned for the visit. Often you will discuss your visit with the archive scientist or archive specialist (or both) beforehand. After you arrive, you will meet also with the archive scientist to discuss your needs at STScI. The archive scientists will be available throughout your visit, up to several hours a day, to help you resolve problems. Most of the support, however, will be provided by an archive specialist, who will be available as needed throughout the visit.

To arrange a visit, contact the archive hotseat. The archive hotseat will e-mail you an editable *Archive Research Visit Request* form, asking for a brief description of the goals of your visit, the kind of support you think you need, and a preliminary list of the datasets involved. (A copy of the form is provided in the appendix, and a PostScript version of the form is maintained on the archive

host machines.) Once the archive hotseat has the completed form, we will contact you to work out the details of your visit. The number and duration of visits is limited by the staff that we have available. If a conflict arises, funded researchers will have priority over those who are unfunded. For most researchers, three to five days is sufficient time to carry out the portions of a project that can be done more efficiently here at STScI.

Questions and Comments

We welcome your comments and questions about the archive in general and about StarView and this primer manual in particular. As discussed above, communication to us regarding all aspects of the archive should normally be directed to the archive hotseat (e-mail: archive@stsci.edu, or phone (410) 338-4547). This will allow DSOB staff to respond to your requests even when individual members of the group are away. If you feel your needs are not being adequately addressed through the hotseat however, please contact the DSOB Branch Chief, Knox Long (send e-mail to long@stsci.edu or phone (410) 338-4826).

2

Getting Started On the Archive System

In This Chapter...

Logging In and Out / 10

What You Can Do on the Archive Host Computers / 12

Available Commands / 12

Guest Users / 14

Registering as a User / 14

Using StarView / 15

Getting Your Data / 15

Converting File Formats / 16

Using FTP / 17

Documentation on the Telescope, Instruments, and Data / 18

Using STSDAS to Analyze Your Data / 20

Reading Text Files in the Documents Directory / 20

Target Cross-Correlation Program / 22

Distributed StarView / 22

Users from outside STScI can access the Hubble Space Telescope (HST) archive through one of the archive host workstations that are maintained at the Space Telescope Science Institute (STScI) specifically for use by archival researchers. There are two such workstations: STDATA (a VAX running the VMS operating system) and STDATU (a Sun workstation running the Unix operating system). We refer to these workstations as the *archive host computers*. Users at STScI can access the HST archive directly by running StarView on STScI computers. The two archive host machines are intended for users accessing the archive from remote sites.¹

A typical archive session consists of the following steps:

1. Logging into one of the archive host computers
2. Reading the archive news

1. If you are running distributed StarView (page 22), you will not need to log in to the archive host computers to run StarView, but you may want to log into them occasionally to read the archive news.

3. Using StarView (the user interface to the HST Archive) to examine the HST catalog and to mark data for retrieval
4. Getting your data and converting it to a proper format
5. Logging out of the host computer
6. Transferring your data back to your home institution's computer via FTP

After this, you can analyze your data on your home computer.

Logging In and Out

This section explains how to use TELNET to log into and out of STDATA or STDATU.

Logging In

Use TELNET to log into STDATA or STDATU.²

- To use the VMS host, STDATA, type:

```
telnet stdata.stsci.edu
or
telnet 130.167.1.135
```

- To use the Unix host, STDATU, type:

```
telnet stdatu.stsci.edu
or
telnet 130.167.1.148
```



You can log in from one of the following terminal types or from a window emulating one of them: xterm, VT100, Sun (shelltool, cmdtool), DEC (VT200, VT300, DECterm, dxterm), or ANSI (generic).

You will be prompted for your user name and password. First-time and non-registered users log in to the guest account using the user name `guest` and the password `archive`. Registered HST archive users should log in with their own user name and password. The guest account will give you complete

² If you are logging in from a Unix machine to STDATU, you can use the `rlogin` command rather than `telnet`; `rlogin` transfers terminal information to the remote host.

access to the HST catalog. To retrieve data files, you must be a registered user (see page 14).

After you log in, your archive session will continue from your own individual work area on the archive host computer's magnetic disk. Guest users share the guest work area. To return to this directory at any point, type `home` from the command line. The size of your work area is limited to 1 megabyte. Your work area allows you to maintain user-specific files and to save files created during a StarView session. It is not intended and is not large enough to serve as a repository for HST data.

Logging Out

You can exit from StarView, the archive user interface, at any time by pressing **Control-X**. Your session will then return to the host system. Exit the host system by typing `logout`.

Reading the Archive News

As you log into STDATA or STDATU, you should read the login message, which contains important information about the current status of the archive. Then, you may want to read the archive news, which provides more information about current archive-related topics, including updates on new capabilities. To read the news type:

```
$ readnews
```

You can also e-mail a copy of any of the articles displayed by `readnews` back to your home computer, after reading the article. Figure 2.1 shows a sample of reading news.

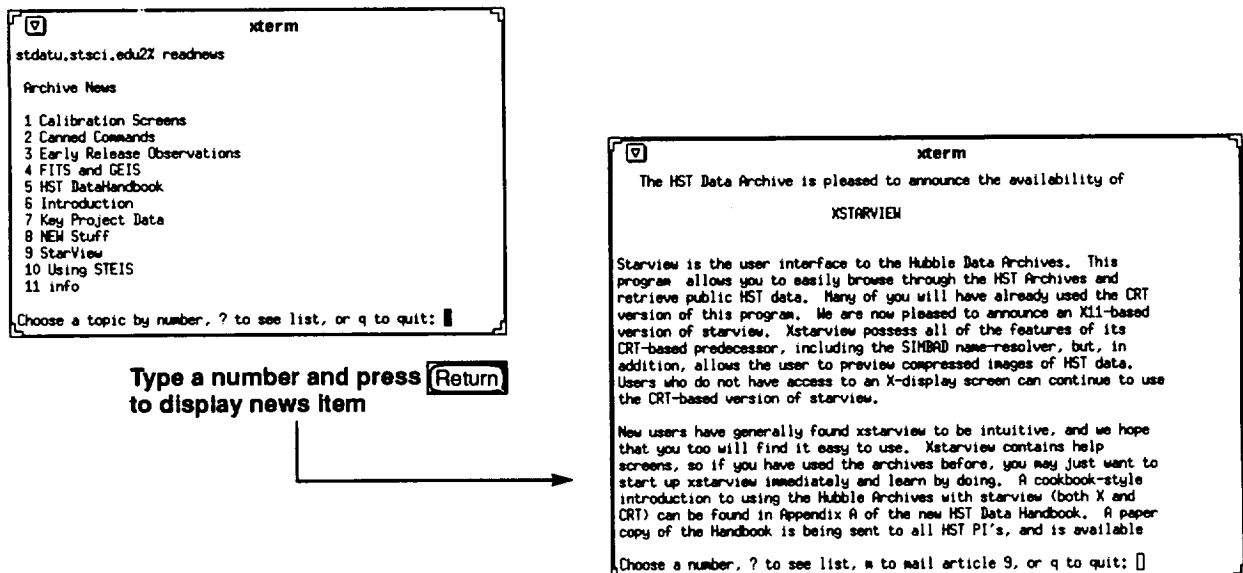


Figure 2.1: Using the `readnews` Command

What You Can Do on the Archive Host Computers

There are several things that you can do on the archive host computers after you have logged in. Most users will want to run StarView, the user interface to the HST archive (see the StarView tutorial on page 26). Through StarView you can:

- View the contents of the HST catalog and select observations of interest.
- Preview public HST data for a quick look.
- Select calibration reference files to recalibrate HST data
- Retrieve data from the archive.
- Perform duplicate checking for the preparation of Cycle 5 HST proposals.

There are several other services available on the hshot computers. For example, you can:

- Execute many, though not all, of the normal system commands (VMS or Unix).
- Access different kinds of text files:
 - Read the archive news (see above).
 - Get copies of text files, including Postscript versions of this primer.
 - Examine the Archived Exposures Catalog (AEC) or the Planned and Archived Exposure Catalog (PAEC).
- Register as an HST archive user so that you can retrieve public HST data.
- Run standalone software tools:
 - To convert data files to various formats (e.g., to Unix or FITS format).
 - To run a cross-correlation between the AEC and your own list of targets.

Available Commands

Your account on the archive host computer allows you to use many VMS or Unix commands. In addition, a number of special commands (see Table 2.1) let you maneuver easily through the directory structure, set up default specifications, obtain information about the archive, and manipulate files.



Type `commands` to display a listing of all available commands.

Command	Purpose
<code>capacity</code>	Check the staging disk capacity
<code>cd directory</code>	Change directory, equivalent to VMS command <code>SET DEFAULT [.directory]</code>
<code>change_editor</code>	Change the default editor
<code>commands</code>	Display a list of available commands
<code>data</code>	Change the default directory to the <code>dmf_stage</code> data disk
<code>dir</code>	List the files in the current directory
<code>docs</code>	Change the default directory to the <code>DOCUMENTS</code> directory
<code>files</code>	Write a listing of the directory contents to a file
<code>home</code>	Return to your home directory
<code>more filename</code>	Display file contents one page at a time
<code>public</code>	Change the default directory to the public data directory
<code>readnews</code>	Read the HST archive news
<code>register</code>	Register as an HST archive user and get your own account
<code>starview</code>	Start terminal version of StarView to access HST archive
<code>stwfits</code>	Convert an HST data file to FITS format
<code>sun2vax</code>	Convert Sun (Unix) format GEIS file to VAX format
<code>tconvert</code>	Convert VAX-format table to Unix format
<code>vax2sun</code>	Convert VAX-format GEIS file to Sun (Unix) format
<code>versions</code>	List the current versions of the archive user documents
<code>vt100</code>	Set the terminal type to VT100
<code>xstarview</code>	Start X-Windows version of StarView to access HST archives

Table 2.1: Commands Available on Archive Host Computers

The default editor for users on `STDATA` is `EDT`; for users on `STDATU` it is `vi`. If you wish to change your default editor, for use on the command line and for use whenever StarView itself invokes an editor, use the `change_editor` command.

Guest Users

When you log in as a guest, you will first be asked to choose an editor for this session. Then a subdirectory will be created for you under the `guest` directory. The `home` command will return you to that directory. You should note the name of the directory that is created for you, in case you wish to use FTP to transfer files you create in a StarView session to your home computer (see 17). The name of the subdirectory is derived from the name of the computer (node) from which you log into STDATA or STDATU (using TELNET). You may occasionally find yourself in a directory originally created for another user who logged in from a similarly-named computer. In that case, we suggest you create a subdirectory within that directory and move there before you run StarView. For example, on STDATU you could type:

```
% mkdir oort
% cd oort
```

On STDATA, you could type:

```
$ create/dir [.oort]
$ cd oort
```

These directories are not permanent and will be removed after two days.

Registering as a User

A guest user has full access to the HST catalog. A guest user using `xstarview` can also preview public HST data, but only registered users can retrieve HST data. To register as an HST Archive user, you must complete an archive registration form. You can register at any time from the command line of the archive host simply by typing `register`.

This command will put you in your default editor and bring up the electronic *HST Archive Account Registration* form. Type in the necessary information and exit the editor. You can exit the editor by:

- Pressing **Control-Z** and then typing `exit` if you are in EDT
- Pressing **Control-X** **Control-C** if you are in emacs
- Pressing **Esc** and then typing `:wq` if you are in vi

When you exit the editor, the form is submitted as an e-mail message to the archive hotseat. A copy of the registration form is included in Appendix A. A PostScript version of the form is

maintained in the `forms` subdirectory of the `documents` directory on the archive host. You can also obtain a copy of the form by sending e-mail to `archive@stsci.edu`.

You will be notified by e-mail of your registration as an archive user within two working days of the time when your request is received. As a registered user, you will be able to retrieve public HST data through StarView. You will be allocated disk space on the archive computer to allow retrieval and limited manipulation of non-proprietary data. Your account on the archive host computer is set up with limited access to STScI software and is not for general-purpose computing.

Using StarView

StarView is the user interface that provides you with access to the HST catalog and data archive. StarView is available in two forms:

- An X-Windows based version (`xstarview`)
- A terminal version for basic terminals such as VT100s

The X version of StarView has some capabilities, such as image and spectrum preview, which are not available in the terminal version. It also has the advantage that all features are invoked simply by using the mouse. However, the generic terminal version of StarView has all the basic features of StarView, and you may find it to be faster if you are logging in to the archive host computers over a slow network connection. If you have access to X-Windows, you may wish to install Distributed StarView on your home computer (see "Distributed StarView" on page 22).

To use the X-windows version of StarView type `xstarview`, for the terminal version type `starview`. If you are using the X-windows version, you will have to provide permission for StarView to display on your local machine. X-StarView will tell you how to do this when starting.

In Chapter 3 of this primer you can find a tutorial to using the archives with StarView, which provides you with all the basic information you need to use StarView to access the HST archive. More detailed information about StarView and the HST archive can be found in the *HST Archive Manual*. (see page 21).

Getting Your Data

Registered users can retrieve moderate amounts of HST data from the HST Archive by submitting a data retrieval request through StarView. After you have submitted your request, the archive system will process it. You will be notified by e-mail when it is complete. The message will go to the e-mail address that you specified on your archive account registration form. If you

choose to retrieve the data to the archive host machine, it will be written to a subdirectory of the `data` disk. Each data retrieval request will be in its own subdirectory, identified by the request ID number (which StarView displayed when you requested the data and which will be included in the notification message). To find your data, type:

```
% data          ← Go to data disk
% cd user0123   ← Go to your subdirectory
% dir           ← List files in directory
```

Data retrieved from the HST Archive is in VAX-specific GEIS format when it is placed on the disk. To convert files to Unix format, you can use the task `vax2sun`. To convert tables to Unix format, use the `tconvert` task. To convert GEIS files to FITS format prior to transferring to your home computer via FTP, you can use the standalone task `stwfits`.

The following sections explain how to retrieve, convert, and transfer your data. Because we have many users, the disk space available to each user within the `data` directory is limited. The files you create in the `data` directory are temporary. Files in this area are deleted automatically after two days. However, we would appreciate your deleting your files from the archive host computer after you successfully copy your files to your home computer.

Converting File Formats

Files that StarView retrieves from the archive are presently VMS-format GEIS files. GEIS files come in pairs, consisting of a header file and a data file. If you plan to use the Space Telescope Science Data Analysis System (STSDAS) on a VMS system to analyze the data, you can directly transfer the retrieved files using FTP back to your home computer. If you plan to use STSDAS on a Unix system, you will first need to convert the GEIS files to Unix format using the STSDAS tool `vax2sun` (see below) because GEIS format is operating-system dependent. When using `vax2sun` on the archive host machines, the original files will be removed. You can also do these same conversions from within IRAF on your home institution's computer, if you are using IRAF there.



The `vax2sun` conversion works only for GEIS files. To convert calibration tables to Unix format, use the `tconvert` tool.

If you do not plan to use the STSDAS software to analyze your data, you will want to convert your data to FITS format using the `stwfits` tool before using FTP to move files to your home computer. Users on STDATU must first convert their files to Unix-format GEIS files before converting them to FITS (i.e., first run `vax2sun`, and then run `stwfits`). Note that FITS files are operating-system independent.

GEIS files come in pairs: a header file with an extension ending in "h" (e.g., `x00c0101t.c0h`) and a data file with an extension ending in "d" (e.g., `x00c0101t.c0d`). FITS combines these two files into a single data file.

See "Getting Your Data" on page 43 for detailed instructions about the use of `vax2sun` and `stwfits`.

Using FTP

You can use FTP to transfer files from the archive host computers to your local computer. This includes any of the ASCII files, such as the PostScript versions of the *HST Archive Manual* or *HST Archive Primer*, or binary data files that you retrieved from the HST archive using StarView.

If you wish to retrieve any ASCII text file, including PostScript documents, you can use the ASCII transfer mode. Set the mode by typing `ascii` at the `ftp>` prompt. Binary files, including GEIS and FITS data files, must be transferred in binary mode. Type `binary` at the `ftp>` prompt. Tables 2.2 and 2.3 show the commands you would use to retrieve files if you logged in as registered or guest users.

Function	FTP Commands (VMS)	FTP Commands (Unix)
Retrieve HST data	<pre>ftp stdata.stsci.edu cd disk\$stage:[DMF_STAGE] cd [.oort0129] binary mget X*.*</pre>	<pre>ftp stdatu.stsci.edu cd /stdatu/dmf_stage cd oort0129 binary mget x*</pre>
Retrieve PostScript version of manual	<pre>ftp stdata.stsci.edu cd disk\$stdata0:[documents] cd [.manuals] ascii get archive_manual.ps</pre>	<pre>ftp stdatu.stsci.edu cd /stdatu/test1/guest/documents cd manuals ascii get archive_manual.ps</pre>
Retrieve your <code>starview.log</code> file from your home directory	<pre>ftp stdata.stsci.edu ascii get starview.log</pre>	<pre>ftp stdatu.stsci.edu ascii get starview.log</pre>

Table 2.2: FTP Commands for Registered STDATA and STDATU Users

Function	FTP Commands (VMS)	FTP Commands (Unix)
Retrieve PostScript version of manual	ftp stdata.stsci.edu cd disk\$stdata0:[documents] cd [.manuals] ascii get archive_manual.ps	ftp stdata.stsci.edu cd documents/manuals ascii get archive_manual.ps
Retrieve your starview.log file from your home directory (if your directory is called mydirectory)	ftp stdata.stsci.edu cd mydirectory ascii get starview.log	ftp stdata.stsci.edu cd data/mydirectory ascii get starview.log

Table 2.3: FTP Commands for Guest Users

Documentation on the Telescope, Instruments, and Data

You can obtain a wide range of technical documentation on the telescope, its instruments, and HST data from the User Support Branch (USB). The USB serves as a central contact point between the scientific community and STScI. Contact the USB at:

User Support Branch
Space Telescope Science Institute
3700 San Martin Drive
Baltimore, Maryland 21218 USA
Phone: (800) 544-8125 (in USA), or (410) 338-4413
E-mail: usb@stsci.edu

Some of the documentation available from USB includes the following. These documents are also distributed to astronomical libraries.

- *HST Archive Primer*, version 4.1, May 1994
- *HST Archive Manual*, version 4.0, December 1993
- *HST Data Handbook*, version 1.0, February 1994
- *STSDAS User's Guide*, version 1.3, April 1994
- *FOC Instrument Handbook*, version 4.0, February 1993
- *FOS Instrument Handbook*, version 4.0, February 1993
- *GHRS Instrument Handbook*, version 4.0, January 1993
- *WF/PC Instrument Handbook*, version 3.0, April 1992

- *WF/PC 2 Instrument Handbook*, version 1.0, March 1993
- *FGS Instrument Handbook*, version 3.0, April 1992
- *OTA Handbook*, version 1.0, May 1990
- *Target Acquisition Handbooks*, version 2.2, January 1992
- *Calibration Status and Plans*, version 2.0, June 1992
- *The GO and GTO Observing Programs*, version 3.0, May 1992
- STEIS instructions

HST Data Handbook

The *HST Data Handbook* provides a comprehensive guide to all major aspects of HST data reduction and analysis. The handbook describes the contents of each dataset, how to display HST images and spectra, ways to identify and correct problems in your HST data, and instructions for doing common analysis and image reconstruction tasks. The handbook assumes no prior knowledge of HST data, the IRAF or STSDAS systems, or any specific knowledge of HST instruments, other than that required to have prepared an observing proposal.

The *HST Data Handbook* is currently shipped to observers along with their data tapes. It was also sent to guest observers whose observations occurred during the past year. The *HST Data Handbook* is available upon request from the User Support Branch (usb@stsci.edu).

Using STSDAS to Analyze Your Data

You can analyze or recalibrate HST datasets using STSDAS. A comprehensive discussion of STSDAS features or a tutorial on how to use the software is beyond the scope of this manual. To learn how to use the system for doing data analysis, you can request copies of the documentation by sending e-mail to usb@stsci.edu. Contact the STSDAS hotseat (hotseat@stsci.edu) for answers to any STSDAS-related questions that you may have..

Reading Text Files in the Documents Directory

The `documents` directory on the archive host computer and its subdirectories contain ASCII files that are of interest to archive users. To get to the `documents` directory from any point, type `docs`. Within this directory is an ASCII file called `documents.list` that contains a list and brief description of all documents maintained in this directory and in its subdirectories. Each subdirectory also contains its own listing file whose name is of the form `<subdirectory>.list`. For example, the `manuals` directory contains a file `manuals.list` that explains the contents of files in that directory.

The ASCII files in the `documents` directory can either be searched online or they can be transferred back to your host computer using FTP (see "Using FTP" on page 17).

Manuals

PostScript files of the latest versions of the *HST Archive Manual* and the *HST Archive Primer* are kept in the `manuals` subdirectory of the `documents` directory. To get to this directory from the `documents` directory, type:

```
$ cd manuals
```

The primer provides all the basic information needed to search the HST catalog and to retrieve HST data using the STScI archive host computers. The *HST Archive Manual* provides more detailed information about StarView and its higher level functions, and about the design of the HST Catalog and Archive.

Forms

Forms related to archival research, such as the *HST Archival Data Request*, *HST Data Distribution*, *HST Archive Account Registration*, and *HST Archival Research Visit Request*, are maintained as PostScript files in the `forms` subdirectory of the `documents` directory.

Exposure Catalogs

The Archived Exposures Catalog (AEC) and the Planned and Archival Exposure Catalog (PAEC) are located in the `exposures` subdirectory under the `documents` directory. Both the AEC and PAEC come in two versions—one that contains all targets and is ordered by RA and one that contains just solar system targets and is ordered alphabetically by target name.

The AEC is updated monthly. The AEC is an ASCII list of observations in the HST Archive and contains information such as the target name, position, instrument, mode, and date on which the data become non-proprietary (publicly accessible). Information provided in the AEC is a selected subset of the keyword information stored in the HST catalog. The AEC is produced through an automated search of the catalog. For more information, see “The AEC and the EC” on page 5-23 of the *HST Archive Manual*.

The PAEC is labeled `PAEC.CAT`. The PAEC is an ASCII listing of all HST targets approved for observation including all general observer (GO) and guaranteed time observer (GTO) observations. Thus, the PAEC includes information for all executed and planned HST observations. Both the PAEC and the AEC are also maintained on the Space Telescope Electronic Information System (STEIS). The PAEC is also stored as a table in the HST archive database and can be examined from within StarView using the <Duplication Check> search screen. (See page 51 for a tutorial).



Target RA and Dec in the AEC and PAEC are in J2000 coordinates.

Target Cross-Correlation Program

We are currently developing a feature in StarView that will allow you to cross correlate a list of target RA and Dec positions against the catalog all at once. When available, you will be able to use this feature by selecting the “Cross Correlation” option under the “Constraint” menu within any search screen that contains an RA and Dec field.

For now, we have provided a tool that correlates the list of exposures in the AEC against a separate list of targets that you provide. You can use this cross-correlation program to find all of the exposures in the AEC for targets on your list. In this way you can quickly determine which of the targets have been observed with HST and with what observation parameters. This is a particularly useful tool when you have a long list of targets, which would otherwise require a substantial number of catalog searches on one of the StarView search screens.

To invoke the cross-correlation program on either archive host computer, type the following:

```
$ corr <parameter_file>
```

where *parameter_file* represents the name of a file containing the various parameters involved in the cross-correlation (e.g., the target list file name, the equinox of the coordinates, the search radius around the target positions within which to search for entries in the AEC, and the list of HST instruments to be included in the search). To find out the format for this parameter file and how to run the `corr` program, get the help file `HOW-TO-USE` from the `documents/exposures/corr` directory on `STDATU`.

Distributed StarView

Running X-windows across a network can be slow when the network is busy; we have therefore developed a client-server version of StarView that runs on your local machine and sends a request to our data base server when it needs information. The performance improvement of the distributed code is evident in most X-starview functions, but is most apparent when previewing images because the client-server software sends the image across the network in a compressed form.

Distributed StarView has all of the capabilities of StarView run from the archive host machines, including the ability to retrieve data from the archive. The data can be written to a tape which we will mail to you, or can be written to disk on the archive hosts for later transfer to your home computer via FTP. If it is run from a Unix

machine, Distributed StarView will place the data on the Unix archive host (STDATU) but if run from a VMS machine the data will be put on the VMS host (STDATA). See "Getting Your Data" on page 15 for more information on retrieving data via FTP.

At this time (May 1994), distributed StarView is available for Sun computers. A VMS version may be released in the near future. Use the readnews command on STDATU or STDATA for more information on how to obtain this software.

Unfortunately, due to U.S. regulations prohibiting the export of software containing encryption algorithms, the distributed version of StarView can only be provided to users in North America.

3

StarView Tutorial

In This Chapter...

StarView Tutorial / 26

Conflict Checking for Cycle 5 Proposals / 46

Tutorial: Retrieving Calibration Reference Files / 45

StarView is the user interface to the Hubble Space Telescope data archive. Using StarView, you can:

- Browse the contents of the archive.
- Select observations that interest you.
- Preview public data in real time.
- Retrieve data from the archive for scientific analysis.
- Select and retrieve calibration files to recalibrate HST data.
- Get information about planned but not yet executed observations.

StarView is fairly intuitive and many users find they can navigate through StarView using only the online help (use the [Strategy] button on any screen or the pull down [Help] menu in the menu bar).

In this Chapter we present two tutorials designed to guide you through StarView and its principle uses. These tutorials include:

- A complete StarView session, including logging in, selecting observations, retrieving data, and transferring that data via FTP from the archive host computer to your home computer.
- A tutorial on selecting and retrieving calibration reference files.



A tutorial session on using the <Duplication Check> and <Proposal Abstracts> screens to search for potential conflicts when preparing Cycle 5 HST Proposals is provided in Chapter 4 on page 51.

StarView is available in two forms:

- An X-Windows based version (xstarview).
- A terminal version for basic terminals, such as a VT100.

The X-Windows version of StarView allows you to preview public HST data, however, all the other basic functions of StarView are available in the terminal version and you may find it faster if you have logged into the archive host computers over a slow network connection.



If you have any questions or problems using the archive, contact the HST archive hotseat via e-mail, archive@stsci.edu, or phone (410) 338-4547.

StarView Tutorial

In this section, a whole StarView session is presented, from logging in to the host computers through using FTP to move the data from the archive host to your home computer. A second tutorial on selecting and retrieving calibration reference files is provided on page 45.

1. Access the STDATU (or STDATA) computer using telnet.¹

```
% telnet stdatu.stsci.edu
Connected to stdatu.stsci.edu.
Escape character is '^]'.
Login: username
Password: password
```

← Type your username and password at the prompts



If you are logging in as a guest, use the username “guest” and password “archive”.

After logging in, some introductory messages will appear on your screen. To see more of the text, press **Space**. To quit, press **Q**.

You can read additional archive-related information by typing:

```
% readnews
```

1. Users at STScI can access StarView directly from their own workstations or terminals—they need not log in the archive host computers, which are maintained exclusively for off-site users.

2. Start the X-Windows version of StarView² (or start the terminal version, as described below) by typing:

```
% xstarview
```

In `xstarview` you will be asked for your X display host name. You should respond with the name of your home workstation. You will then be instructed to give `STDATA` or `STDATU` permission to write to your screen; to do this on a Unix workstation, you need to add “`stdatu`” to your computer’s `xhost` file by typing the following line in another window and then pressing **Return** to continue:

```
% xhost +stdatu.stsci.edu
```

If you are using a DEC workstation, you would give the system permission to write to your screen by going to the menu bar of your Session Manager and pulling down the **|Customize|** menu and choosing the **Security** option. You then set:

- “`NODE`” to “`stdata.stsci.edu`”.
- “`USERNAME`” to either “`*`” or your username on `STDATA`.
- “`TRANSPORT`” to “`TCPIP`”.

If you want to use the terminal version instead, you would type:

```
% starview
```

In the terminal version, you will be asked to confirm your terminal setup. For example:

```
xterm 24 x 80 [Y]:
```

If this is correct, press **Return** to continue. If this is not correct, then answer “no” by pressing **N** followed by **Return**. If you answer “no,” you will then be asked some questions about your terminal type, number of lines, and number of columns. Type a question mark (**?**) to get help about your options.

The StarView session is then started; messages will be displayed telling you what is happening (e.g., data dictionaries being loaded). This process will take about a minute to complete.

Welcome Screen

The StarView <Welcome> screen (Figure 3.1) will appear (this and all subsequent screens are taken from the X-Windows version). There is an initial message at the bottom of the screen telling you that the system is “Loading

2. The X-Windows version of StarView is also available as distributed software which you install and run on your home computer. By running the `xstarview` client on your own computer, you avoid the overhead of running the software over the network, giving you a considerable speed improvement. For information about how to install `xstarview` on your home system, use the `readnews` command on `stdatu` or `stdata`, or contact the archive `hotseat`.

the SQL query generator...” While this load is taking place, read the welcome text. If there is any urgent archive news (e.g., a message about possible system downtime), it will appear at the top of the welcome text. While the loading takes place, any input from your terminal keyboard will be ignored (i.e., flushed from the input buffer).

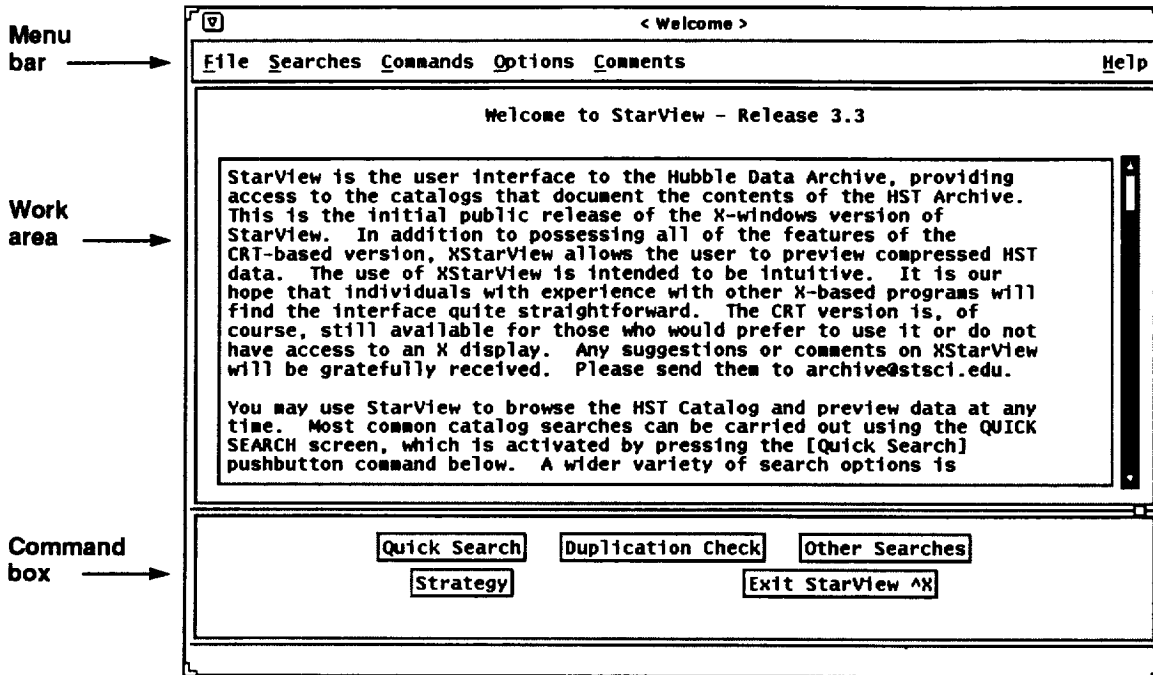


Figure 3.1: Welcome Screen

You can scroll through the text and read any additional information below the display area by using the scroll bar on the X-windows version of StarView. On the terminal version (for VT100 or other basic terminals), use the arrow keys or page up by pressing **Control-V** and page down by pressing **Control-P**.

Command Usage and Screen Interaction

In the X-windows version of StarView:

- Use the mouse to select all functions.
- Choose options by positioning the mouse pointer over the command button or menu and pressing the left mouse button.

In the terminal version:

- Press **Control-T** to cycle through the three screen areas (*menu*, *work area*, and *command box*).

- Use the arrow keys to move around within any one portion of the screen.
- Whenever an option is highlighted, press **[Return]** to invoke the highlighted function.

On the terminal version, you can use the *command accelerators* to invoke functions (i.e., run commands). Some command buttons show accelerators such as “^N”, which means the function or command can be invoked by pressing down on the **[Control]** key while simultaneously pressing the **[N]** key. Other commands show accelerators such as “E+n”, which means that you would press the **[Esc]** (escape) key followed by **[N]**. Table 3.1 lists the commonly used command accelerators.

Keystroke	Function
[Control] [T]	Cycle through the three screen areas (menu bar, work area, and command box)
[Control] [W]	Return to previous screen
[Control] [X]	Exit StarView
[Control] [O]	Display strategy help (context sensitive)
[Control] [L]	Refresh screen display

Table 3.1: Command Accelerators (Terminal Version)

Searching the Catalog

To search the catalog:

1. Choose a search screen.
2. Specify your search criteria, such as position and a release date before today's date so that you get public data.
3. Start the search by clicking on the **[Begin Search]** button.
4. Step through subsequent found observations looking for those of interest to you.

In this example we use the <Quick Search> screen to search the HST catalog.

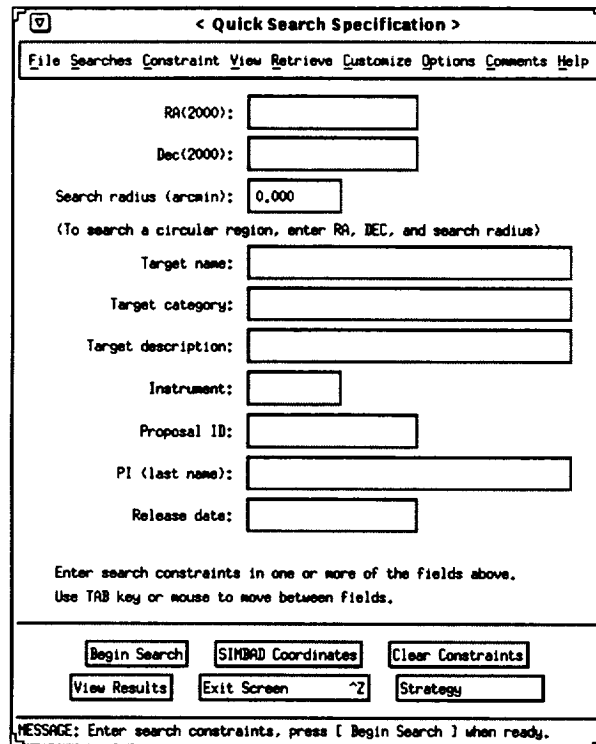


The <Quick Search> screen is useful for most basic searches of the HST catalog. An extensive set of more detailed search screens are also available. To choose one of these, click on **[Other Searches]** or pull down the **[Searches]** menu from the menu bar. Figure 3.15 on page 46 shows the <Other Searches> screen.

The Quick Search Screen

Choose the <Quick Search> screen by clicking the [Quick Search] button. As described here, clicking in xstarview is done by moving the cursor to the command button and pressing the left mouse button. In the terminal version, either (1) use **Control-T** to move the cursor to the command box, and the arrow keys to move the cursor until the button is highlighted then press **Return**, or (2) press **Control-J**, the accelerator for the QuickSearch command.

The <Quick Search> screen is shown in Figure 3.2. We will use this screen to search for all publicly-available 3C273 observations.



< Quick Search Specification >

File Searches Constraint View Retrieve Customize Options Comments Help

RA(2000):

Dec(2000):

Search radius (arcmin):

(To search a circular region, enter RA, DEC, and search radius)

Target name:

Target category:

Target description:

Instrument:

Proposal ID:

PI (last name):

Release date:

Enter search constraints in one or more of the fields above.
Use TAB key or mouse to move between fields.

Begin Search SIMBAD Coordinates Clear Constraints
View Results Exit Screen ^Z Strategy

MESSAGE: Enter search constraints, press [Begin Search] when ready.

Figure 3.2: Quick Search Screen

Specifying Search Criteria

There are various ways to search for observations of a particular target in the catalog. The easiest way is to enter the name (which you should embed in *qualifiers*, or wildcard characters, e.g., *mars*) in the target field. Because observers do not necessarily use the same convention to name sources, this will typically not return all observations of a given source. The best way to be certain you retrieve *all* observations of a given target (for stationary targets) is to search for observations within a given (radial) distance of your source's position by entering constraints in the RA, Dec, and search radius fields on the <Quick Search> Screen.



If you do not know the RA and Dec of your target, you can run the SIMBAD coordinate resolver from within StarView. The SIMBAD resolver automatically determines the target's position using a network connection to the SIMBAD database in Europe, it then populates the RA and Dec fields on the search screen with this information. Click on the [SIMBAD Coordinates] button to invoke this option (see Figure 4.1 on page 52).

In this case, we know the coordinates of 3C273, so we enter the RA and Dec for 3C273 and a search radius of 10 arcminutes in the corresponding fields on the search screen.

We want imaging observations, so move to the "Instrument" field. The valid HST instruments are:

- Fine Guidance Sensors (FGS).
- Faint Object Camera (FOC).
- Faint Object Spectrograph (FOS).
- Goddard High Resolution Spectrograph (GHRS).
- High Speed Photometer (HSP).
- Wide Field/Planetary Camera (WFPC).
- Wide Field Planetary Camera 2 (WFPC2).

The FOC, WF/PC, and WFPC2 are the HST's imaging instruments, so type `foc,wfpc,wfpc2` in the "Instrument" field to find imaging observations—StarView interprets the commas to be "or".

We want public data, so now specify that we want data released prior to today's date. For example, move to the "Release date" field and enter `<1-May-94` for any datasets that were released before May 1, 1994.

Figure 3.3 shows how the <Quick Search> screen looks at this point.

< Quick Search Specification >

File Searches Constraint View Retrieve Customize Options Comments Help

RA(2000): 12 29 6.7

Dec(2000): 02 03 08

Search radius (arcmin): 10.000

(To search a circular region, enter RA, DEC, and search radius)

Target name:

Target category:

Target description:

Instrument: FOC,WFPC,W

Proposal ID:

PI (last name):

Release date: <01-MAY-94

Enter search constraints in one or more of the fields above.
Use TAB key or mouse to move between fields.

Begin Search SIMBAD Coordinates Clear Constraints

View Results Exit Screen ^Z Strategy

MESSAGE: Enter search constraints, press [Begin Search] when ready.

Figure 3.3: Quick SearchScreen With Constraints Entered

To help you understand how you can constrain searches, Table 3.2 lists the qualifiers available to you within StarView.

Operator	Function
=	Equal to
!=	Not equal to
>	Greater than
>=	Greater than or equal to
<	Less than
<=	Less than or equal to
..	Range
, (comma)	List ^a
*	Wild card

a. Do not use commas in date fields (example May 1, 1994)—use dashes instead. For example, May-1-94.

Table 3.2: Relational Operators for Constraining Searches

Getting Help in StarView

Use the [Strategy] button to get information about using any StarView screen, or use the pull down [Help] in the menu bar to see all the available StarView help.

To get help on the valid ranges for any field, use the *field help*. In xstarview, move the cursor to the field and press the right mouse button (or press the **Help** button, often located in the bottom left corner of your keyboard). In the terminal version, move the cursor to the field and press **Control-H**.

Starting the Search

Click on the [Begin Search] button to search the catalog for the observations satisfying your search criteria. If none are found, a message will appear at the bottom of the screen, and you will need to enter different search constraints. If at least one observation is found, the screen will change to the <Quick Search Results> screen.

The <Quick Search Results> screen (Figure 3.4) shows the results of your catalog search. The first record that matches your search criteria will be displayed.

< Quick Search Results >

File Searches Constraint View Retrieve Customize Options Comments Help

Proposal ID: 1116 PI (last name): WESTPHAL

Dataset name: MOHD0601T Release date: 02/25/92 15:23:34 Marked: F

RA(2000): 12h 29m 6.37 Dec(2000): +2d 3m 3.676s Equinox: J2000

Target name: 3C273-OFFSET Moving (T/F): F

Category: GALAXY

Description: GALAXY;QUASAR;

Instrument: WFPC Config: PC Optical mode: IMAGE

Filter/grating 1: F555W 2: 3: 4:

Aperture 1: P6 2: 3: 4:

Exposure time (s): 2.600 Start: 02/25/91 05:57:12 Flag: NORMAL

Quality 1: OBJECT IN PC 5 INSTEAD OF PC 6

Quality 2: OBJECT VERY CLOSE TO EDGE OF CCD

Record 1 of 1 (in progress)

MESSAGE: More records available. Use record controls to view search results

Figure 3.4: Quick Search Results Screen With Record Display

Viewing Subsequent Found Observations

If you want to scan the full list of your search results:

- Click the [Step Forward] button to view one record at a time.
- Click [Scan Forward] to see all of the found records in rapid succession. Press any key to stop the scan.
- To go back to previous records, use [Step Back] or [Scan Back] buttons.

Another way to view your search results is to use StarView's <Table Format> screen. Click on [View Result as Table] to see a page of catalog records at the same time (see Figure 3.5). Click on [View Result as Form] to return to the single-record screen format.

< Search Results - Table Format >

File Searches Constraint View Retrieve Customize Options Comments Help

Mark	propos_id	dataset_name	release_date	target_name	config	opcode	spec_1	exp_time	pi_name
<input type="checkbox"/>	1116	W0HD0601T	02/25/92 15:	3C273-OFFSET	PC	IMAGE	F555W	2,500	WESTPHAL
<input type="checkbox"/>	1116	W0HD0602T	02/25/92 15:	3C273-OFFSET	PC	IMAGE	F785LP	5,000	WESTPHAL
<input type="checkbox"/>	1116	W0HD0603T	02/25/92 15:	3C273-OFFSET	PC	IMAGE	F555W	40,000	WESTPHAL
<input type="checkbox"/>	1116	W0HD0604T	02/25/92 16:	3C273-OFFSET	PC	IMAGE	F785LP	70,000	WESTPHAL
<input type="checkbox"/>	1116	W0HD0605T	02/25/92 16:	3C273-OFFSET	PC	IMAGE	F785LP	300,000	WESTPHAL
<input type="checkbox"/>	1116	W0HD0606T	02/25/92 16:	3C273-OFFSET	PC	IMAGE	F785LP	300,000	WESTPHAL
<input type="checkbox"/>	1227	X0LA0101T	02/24/93 16:	3C273	F0C/96	IMAGE	CLEAR1	1301.125	BOKSENBER
<input type="checkbox"/>	1227	X0LA0302T	03/01/93 22:	3C273	F0C/288	IMAGE	CLEAR1	995.750	BOKSENBER
<input type="checkbox"/>	1227	X0LA0102T	02/24/93 22:	3C273	F0C/96	IMAGE	F4ND	277.125	BOKSENBER
<input type="checkbox"/>	1227	X0LA0201T	03/01/93 22:	3C273	F0C/96	IMAGE	CLEAR1	1002.125	BOKSENBER
<input type="checkbox"/>	1227	X0LA0202T	03/02/93 15:	3C273	F0C/96	IMAGE	CLEAR1	1195.750	BOKSENBER
<input type="checkbox"/>	1227	X0LA0203T	03/01/93 22:	3C273	F0C/96	IMAGE	CLEAR1	995.750	BOKSENBER
<input type="checkbox"/>	1227	X0LA0204T	03/01/93 22:	3C273	F0C/96	IMAGE	CLEAR1	995.750	BOKSENBER
<input type="checkbox"/>	1227	X0LA0301T	03/01/93 22:	3C273	F0C/288	IMAGE	F2ND	995.750	BOKSENBER
<input type="checkbox"/>	2451	X0L20101T	01/05/93 17:	3C273-JET	F0C/96	IMAGE	POLO	1445.875	THOMSON

Record 15 of 15 (in progress)

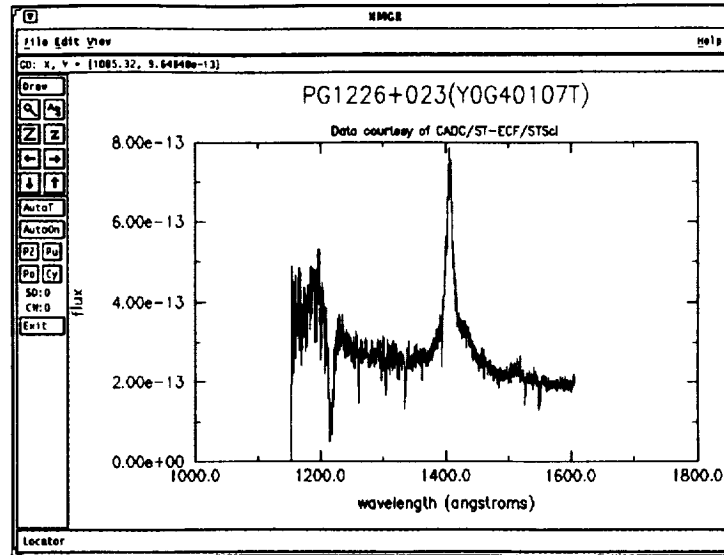
MESSAGE: More records available. Use record controls to view search results

Figure 3.5: Quick Search Results Displayed on the Table Format Screen

Preview

If you are using `xstarview`, use the `[Preview]` button to get a quick look at the data. This can help you decide whether or not to retrieve a dataset. Preview displays compressed HST images (not suitable for science analysis), as well as FOS or GHRs spectra. Only public data is available for preview. Figure 3.6 shows an example of datasets viewed with the `[Preview]` command; spectra and images are displayed differently, and the figure shows both an FOS spectrum and a WF/PC image. Preview is not available in the terminal version of StarView.

Previewing FOS Data



Previewing FOC Data

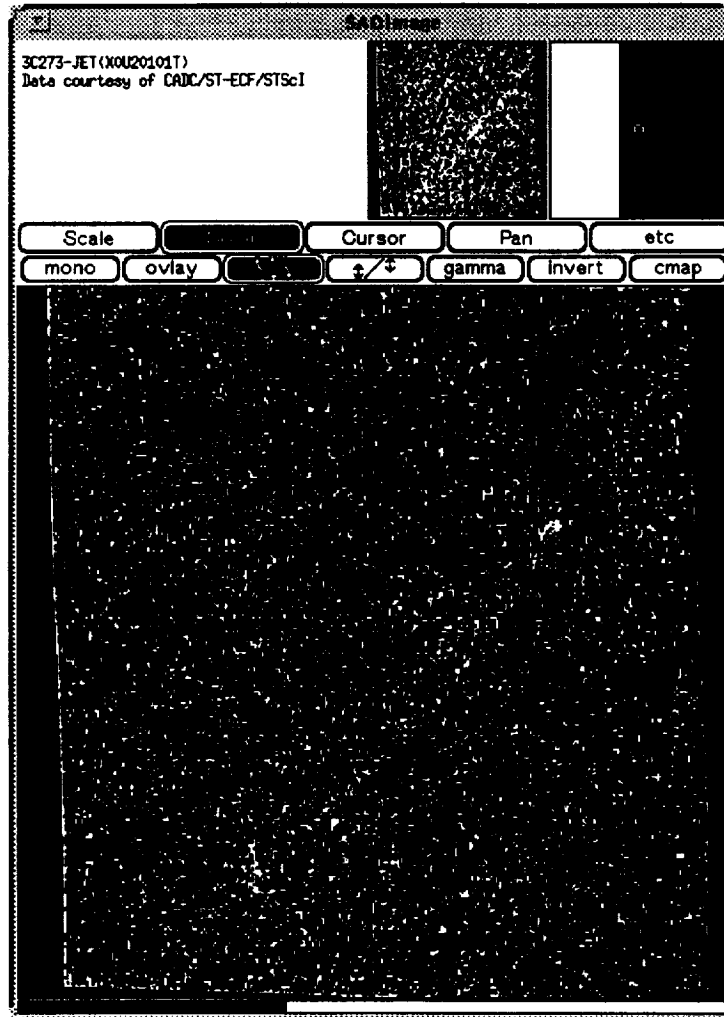


Figure 3.6: Previewing a Dataset

Retrieving Datasets From the Archive

We now want to retrieve the data that the catalog has identified. To do this, you will mark the data for retrieval and then do the retrieval. There are several steps in this process:

1. Mark the observations that you want to retrieve; you can mark them either individually or as a group.
2. Display and review the list of datasets to be retrieved.
3. Specify the file formats and media to be used in the retrieval process.
4. Submit the request.
5. Check the request status, if desired.

If you do not have an archive account, then you will not be able to retrieve data until you have registered with STScI. For information about how to register, see page 14.

Marking Observations for Retrieval

To mark for retrieval the dataset displayed on the screen, click the **[Mark Dataset]** button. This action will be confirmed by a message at the bottom of the screen. Also, the "Marked" field, in the upper right corner of the screen, will display "T" (True) indicating that the dataset has been marked for retrieval.

You can mark datasets for retrieval in either the table-row format display screen, in which case the highlighted record is marked, or on the <Quick Search Results> screen with the record displayed.

If you want to mark for retrieval *all* of the records matching your search criteria, click on the **[Mark All]** button. This could be a large volume of data, and it would be for the 3C273 search request described here. Alternatively, step through your search results records by clicking on the **[Step Forward]** button and only click on the **[Mark Dataset]** button for a few of the observations.

Reviewing the Retrieval Request

Once you have marked records for retrieval, you begin the retrieval process by displaying and reviewing a list of datasets to be retrieved. To do this:

1. Click on the **[Retrieve Marked Data]** button to exit the <Quick Search Results> screen and to begin the retrieval process by bringing up the <Archive Retrieval> screen.
2. Review the list of datasets.

The <Archive Retrieval> screen lists all of the datasets that you have marked for retrieval. In this case, you would see something like Figure 3.7.

< Retrieval Request - File Options >

File Commands Comments Help

If you do not have an archive account, please contact the Archive Hotseat.
 Phone: 410-338-4547 Email: archive@stsc1.edu or STSCIC::ARCHIVE

Science Files Requested: (all other marked files are retrieved as requested)

- Calibrated ... all calibrated science data files
- Uncalibrated ... raw data; uncalibrated science data files
- Data Quality ... reports describing science data quality

(Use TAB key or mouse to move to an option, then use mouse button to select the option.)

Use Default File Options Submit Request Exit Screen ^Z

Override Standard File Options Strategy ^O

MESSAGE: Review selections. Push [Submit Request] to continue with retrieval.

Figure 3.8: Retrieval Request - File Options Screen

The <Retrieval Request - File Options> screen indicates the kinds of files that will be retrieved, in this case the calibrated science data files and the data quality report files will be retrieved. These defaults are acceptable.³ Click the [Submit Request] button to continue with the retrieval process. To help you determine the amount of data that you are requesting, Table 3.3 lists typical file and dataset sizes for each instrument.

3. You can override the defaults and provide your own file extensions by using the [Override Standard File Options] button.

Instrument	Mode	Single File Size	CAL Class Size
FOC	normal 512 x 512	1 MB	~4 MB
	zoom 1024 x 512	2 MB	8–10 MB
FOS	normal	20–80 KB	<500 KB
	rapid readout	>4 MB	>10 MB
GHRS	normal	20–80 KB	< 500 KB
	rapid readout	>4 MB	>10 MB
HSP	normal	~40 KB	~500 KB
	occasional	>125 MB	>1 GB
WFPC, WFPC2	normal (full mode)	10 MB	26 MB
	area mode	2.5 MB	7 MB

Table 3.3: Average Data File Size per Instrument

The <Retrieval Request - Media Options> screen is then displayed (Figure 3.9). You will need to enter your archive user name and password, pressing **[Return]** after each entry.

< Retrieval Request - Media Options >

File Commands Comments Help

If you do not have an archive account, please contact the Archive Helpdesk.
Phone: 410-338-4547 Email: archive@stsci.edu or STSCIC::ARCHIVE

Archive Username:

Archive Password:

Media: Format:

◆ LAN Local Area Network (GEIS only) ◆ GEIS

◆ EXA Exabyte 0mm cassette ◆ FITS

◆ HT6 9 Track Mag Tape, 6250 bpi (FITS is not available

◆ HT1 9 Track Mag Tape, 1600 bpi over LAN at this time)

(Use TAB key or mouse to move to an option, then Return to select the option.)

Submit Request Use Default Options Exit Screen ^Z Strategy ^O

MESSAGE: Review selections. Push [Submit Request] to continue with retrieval.

Figure 3.9: Retrieval Request- Media Options Screen

The screen will indicate LAN (local area network) as the default distribution medium. This is acceptable—your data will be retrieved to a subdirectory of the data disk on STDATU. You will then be able to ship it electronically from there to your home computer via FTP, as described in “Getting Your Data” on page 43. Also indicated on the screen is the default data format, which is GEIS. This is also acceptable if you plan to use the STSDAS package for your data analysis.



Note that your retrieved files will be in VMS format. If you are using a Unix system, you will need to convert the files to Unix format using the `vax2sun` task, as described later in this chapter.

Submit the Request

After you select the file and media types, you will submit your request. To do this:

1. Begin request submission process.
2. Display and edit a list of actual file names to be retrieved (if desired).
3. Submit the request.
4. Exit the retrieval screens and return to StarView.

Click on the [Submit Request] button to begin the submission process. The archive system will validate your archive account information and then map the marked datasets to the corresponding list of data files.

You will be asked if you want to edit the list of requested files before submitting the retrieval request for final processing. The default answer is “no.” Press **[Return]** if you wish to skip the edit step and have StarView continue processing your request.

StarView verifies that your requested files are public and that the total amount of requested data is within allowable limits.

If these tests are successful, your retrieval request will be submitted; the system will display a message on your screen along with a *request ID* (retrieval request identification string). Figure 3.10 shows how a StarView screen might look at this stage.



Write down the request ID. You will need it later to check the status of your retrieval request and to locate your data directory on the data disk.

```

xterm
Validating user: aas
Mapping datasets to files...
    XOLA0101T
    XOLA0102T
    XOLA0201T
    XOLA0302T
    4 datasets ==> 26 files
Do you wish to edit the list of files? [N]

File verification and proprietary rights checking...
Checking quotas...
OKAY - Request size of 4332 bytes falls within aas available quota of 20971520 b
ytes!
Request submitted. Request id: aas4862 ← Request ID
Press return to continue... █

```

Figure 3.10: Retrieval System Messages

The list of files in your retrieval request is written to a file in your working directory. The root of the file name is the request identification string, and the file name extension is `.req` (for example: `user1234.req`).

Press **[Return]** to exit from the retrieval process and to return to the StarView screen from which you initiated the retrieval request.

Checking Request Status

You can check the status of your retrieval request, to do this:

1. Click on the **[Retrieval Status]** button from within the **[Retrieve]** menu on most StarView search screens, or click on the **[Commands]** menu from the **<Welcome>** screen.
2. You will be asked to enter your request ID (as displayed in the previous steps). Type the request ID.
3. Press **[Return]** to continue with your StarView session. Figure 3.11 shows a sample retrieval status screen.

Status flag—"F" means request is in the queue

"R" means request is complete; files retrieved to disk

A number means your data were written to tape

```

xterm
Enter request id or user id (stevens): aas
Status of the latest request submitted: (aas4862)
-----
Status MBytes      Number_of_Files
-----
F                  4,229940          26
? : Files not mentioned in the database. Error in file name ???
E : Error while retrieving the files. Sorry.
F : Files to be processed soon.
N : Files not currently in the archive.
P : Files under proprietary restriction. Try again later.
R : Files retrieved on staging disk.
n : (where n = 1..9): Files already on mag tape number n.

(1 row affected, return status = 0)
Press return to continue...

```

Figure 3.11: Sample Retrieval Status Screen

Exiting StarView

You can now either continue working in StarView, or you can exit. You could also exit from the archive host system (stdatu) altogether and wait for the mail message that will tell you that the files have been retrieved and are ready for you. This message will go to the e-mail account that you identified when you registered for an archive account.

Press **Control-X** to exit StarView. A dialog box will appear asking you to confirm that you really want to exit. Click on [OK] to exit.

Getting Your Data

After your data have been retrieved from the archive, you will receive an e-mail notification telling you that your files have been retrieved to your directory on the data disk on stdatu (or stdata). The files retrieved from the HST archive are currently VMS format GEIS files (see page 15).

There are three ways in which you may work with the HST data files:

- Using STSDAS on a VMS machine: You can retrieve the files directly using FTP (as shown in Figure 3.14) to transfer them to your home computer.
- Using STSDAS on a Unix machine: You can first convert the files to Unix format GEIS files using `vax2sun` (Figure 3.12), and then transfer the files to your home computer using FTP (Figure 3.14).
- Using other software on any platform: You can use `stwfits` to convert the files to FITS format (Figure 3.13), and then use FTP to transfer the FITS files to your local computer (Figure 3.14). If you are on STDATU, then you must first use `vax2sun` (Figure 3.12) and then use `stwfits` on the converted files.

```

% data
% cd aas4862
% dir
x00c0102t.c0h x00c0102t.c0d
x00c0102t.c1h x00c0102t.c1d
x00c0102t.d0h x00c0102t.d0d
x00c0102t.shh x00c0102t.shd
% files
  template: *.*h
  outfile: myfile.lst
% more myfile.lst
x00c0102t.c0h
x00c0102t.c1h
x00c0102t.d0h
x00c0102t.shh
% mkdir converted
% vax2sun
  input: @myfile.lst
  output: converted
% cd converted
% dir
x00c0102t.c0h x00c0102t.c0d
x00c0102t.c1h x00c0102t.c1d
x00c0102t.d0h x00c0102t.d0d
x00c0102t.shh x00c0102t.shd

```

Go to appropriate directory
 Look at directory contents
 VMS format GEIS files
 Use files task to write list of all files matching template in directory to a file (myfile.lst)
 Make subdirectory for converted files (On STDATA, use create/dir [.converted])
 Convert files to Unix format and write to converted directory (On STDATA use output: [.converted])
 Unix format GEIS files

Figure 3.12: Converting File Formats Using vax2sun

```

% data
% cd aas4862
% cd converted
% dir
x00c0102t.c0h x00c0102t.c0d
x00c0102t.c1h x00c0102t.c1d
x00c0102t.d0h x00c0102t.d0d
x00c0102t.shh x00c0102t.shd
% files
  templates: *.*h
  outfile: myfile.lis
% more myfile.lis
x00c0102t.c0h
x00c0102t.c1h
x00c0102t.d0h
x00c0102t.shh
% stwfits
  iraf_files: @myfiles.lis
  fits_file: fitsfile
  Format_file:
  log_file:
% dir fitsfile*
fitsfile001
fitsfile002
fitsfile003
fitsfile004

```

Go to appropriate directory
 List files in directory
 Create a list file called myfile.lis of all header files in directory
 List file contents
 Creates files named fitsfile001, fitsfile002, etc.
 No response needed
 FITS format files

Figure 3.13: Writing FITS Files


```

Connect to archive host → % ftp stdatu.stsci.edu
                          Connected to stdatu.stsci.edu.
                          220 stdatu.stsci.edu FTP server (Version 5.86) ready.
                          Name (stdatu.stsci.edu): Type your username
                          Password: Type your password
                          .
Move to correct directory → <message of the day displayed here>
                          .
Set transfer mode to binary → ftp> cd stdatu/dmf_stage/aas4862
                              250 CWD command successful.
                              ftp> binary
                              200 Type set to I.
                              ftp> prompt
                              Interactive mode off.
Transfer files → ftp> mget x*.*
                              200 PORT command successful.
                              50 Opening BINARY mode data connection for x01a0101t.c0d
                              226 Transfer complete
                          .
Close connection → ftp> bye
                          221 Goodbye.

```

Figure 3.14: Retrieving Files Using FTP

You are now ready to begin analyzing your dataset. Remember, if you have any problems or questions, contact the archive hotseat at archive@stsci.edu, or phone (410) 338-4547.

Tutorial: Retrieving Calibration Reference Files

StarView provides calibration reference file screens for each instrument. These screens let you see which calibration files and tables were used to calibrate a given dataset by the PODPS pipeline and which files and tables are currently recommended. You can mark either the used or the recommended reference files and tables for retrieval and retrieve them through StarView.



If you already know the name of the calibration reference file or table you wish to retrieve (e.g., if you have determined the file name from a listing on STEIS), then you can retrieve just that file by using the [Add dataset] function on the retrieval screen. This is described on page 49.

In this example, we use a StarView reference file screen to retrieve both the *used* and *recommended* calibration files for a 3C273 dataset.

1. Start StarView as described in “StarView Tutorial” on page 26. This will bring up the <Welcome> screen (Figure 3.3).

- Click the [Other Searches] button.⁴ (We want to find the appropriate search screen for calibration reference files.) The <Other Searches> screen will be displayed (Figure 3.15), with the cursor highlighting “Quick Search”.

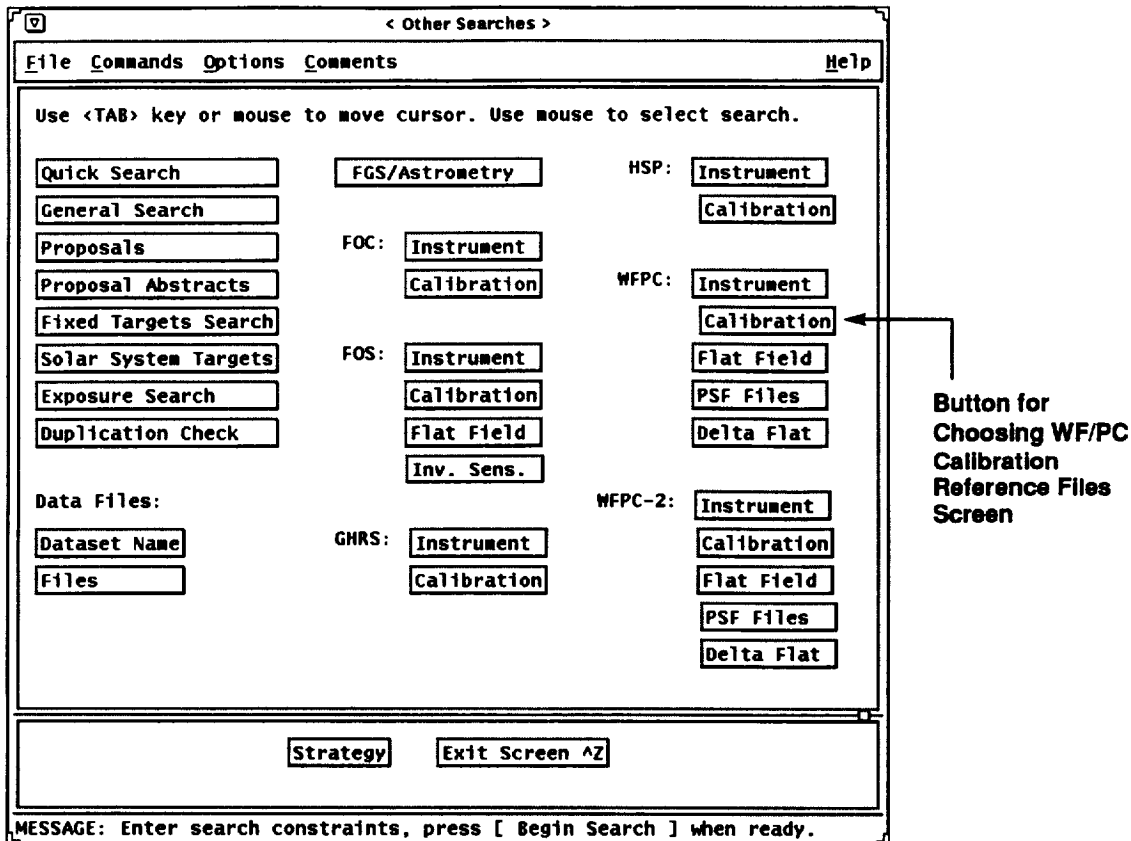


Figure 3.15: Other Searches Screen

- Select the <WFPC Reference Files> screen because we will retrieve calibration files for a WF/PC observation. The <WFPC Reference Files - Search Specification> screen will be displayed.
- Specify criteria. We want to specify a particular dataset, so press the arrow keys until the cursor moves to the “Rootname” field, and then type the dataset name for the observation whose calibration files will be retrieved. For example, enter W19C0101T (see Figure 3.16).

4. Users of the terminal version can use the accelerator E+1.

< WFPC Reference Files - Search Specification >

File Searches Constraint View Retrieve Customize Options Comments Help

PI : Proposal ID :

Target :

Rootname: Filter1: Camera: Mode:

Filter2: Clock: Shutter:

Orien.A : Orien.B: Orien.C: Orien.D:

	USED	RECOMMENDED	PERFORMED
A-to-D Correction:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Bias Correction:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Dark Current Correction:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Flat Field Correction:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Static Pixel Mask:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Preflash Correction:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Purge Reference File:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Engineering File:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Photometry Cal. Table:	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>

Enter search constraints in one or more of the fields above.
Use TAB key or mouse to move between fields.

Begin Search Clear Constraints

View Results Exit Screen ^Z Strategy

MESSAGE: Enter search constraints, press [Begin Search] when ready.

Figure 3.16: WFPC Reference Files - Search Specification Screen (Constrained)

5. Click on the [Begin Search] button to submit your catalog search request. The <WFPC Reference Files - Search Results> screen will be displayed for the observation that you specified (Figure 3.17).

< WFPC Reference Files - Search Results >

File Searches Constraint View Retrieve Customize Options Comments Help

PI : MESTPHAL Proposal ID : 4769

Target : 3C273-OFFSET

Rootname: W19C0101T Filter1: 29 Camera: PC Mode: FULL

Filter2: 0 Clock: OFF Shutter: B

Orien.A : -15.528 Orien.B : 74.383d Orien.C : 165.483 Orien.D : -105.02

	USED	RECOMMENDED	PERFORMED
A-to-D Correction:	MREF*C261402TW,R1H	C261402TW,R1H	DONE
Bias Correction:			
Dark Current Correction:	MREF*C261403LM,R2H	DBC0826NW,R2H	DONE
Flat Field Correction:			
Static Pixel Mask:	MREF*C611649TW,R5H	DSC1345QW,R5H	NO
Preflash Correction:	MREF*C191643EW,R6H	C191643EW,R6H	DONE
Purge Reference File:			
Engineering File:	MREF*BB61518LM,R0H	BB61518LM,R0H	DONE
Photometry Cal. Table:			
	MREF*CB08267W,R3H	DBC08267W,R3H	DONE
	MREF*9CX10279M,R4H	9CX10279M,R4H	NO
	MCAL*W19C0101T,X0H		DONE
		CBJ15281W,CW0	DONE

Step Forward Step Back Mark USED Files for One Dataset

Scan Forward Scan Back Mark RECOMMENDED for One Dataset

Edit Search Constraints Mark USED Files for All Datasets

Write Search Results to File... Mark RECOMMENDED for All Datasets

Retrieve Data Strategy Unmark All Files for One Dataset

Record 1 of 1 (in progress) Unmark All Files for All Datasets

Exit Screen ^Z

Use up/down arrow keys in data area to scroll full list of calibration files.

MESSAGE: More records available. Use record controls to view search results

Figure 3.17: WFPC Reference Files - Search Results Screen (With Results Displayed)

- Click [Mark USED Files for One Dataset] to mark for retrieval those calibration files actually used to calibrate the dataset. If the files listed in the RECOMMENDED column differ from those in the USED column, then you can click on [Mark RECOMMENDED for One Dataset] to retrieve the calibration files that are now recommended for calibrating the data.
- Click the [Retrieve Data] button to begin the retrieval process for the marked reference files. Continue with the data retrieval procedures as outlined in "Retrieving Datasets From the Archive" on page 37.



The defaults on the <Retrieval Request-File Option> screen, i.e., calibrated, will return the correct files for the specified calibration reference files and tables. You do not need to specify an extension.

Retrieving a File By Name

If you know the name of a file or dataset that you wish to retrieve from the archives, you can retrieve it directly using the **[Add Datasets by Name]** button from the <Archive Retrieval> screen. To get to this screen from the <Welcome> screen, pull down the **[Commands]** menu in the menu bar (see Figure 3.1) and choose the “Retrieve Marked Datasets” option. This will place you in the <Archive Retrieval> screen.

Click on the **[Add Datasets by Name]** button from the <Archive Retrieval> screen (or use **[Add Datasets from File]** if you have a list of dataset names). Enter the rootname (*no extension*) of the calibration reference file or science file you wish to retrieve. When you have added all the rootnames for the files you wish to retrieve, click on **[Submit Request]** and proceed with the retrieval process as described on page 37.

4

Duplication Checking

The simplest and most robust way to determine whether the observations you wish to propose for Cycle 5 conflict with previously accepted GO or GTO observing programs is to use the <Duplication Check> screen in StarView. This screen can be used to perform target name based searches or RA and Dec based searches of all planned or completed HST observations. Archival proposers will also find the <Duplication Check> screen useful for preparing their archival proposals. Preview of public data is available from this screen from xstarview.

In this chapter, we provide an example that shows how to use StarView to perform duplication checking. We use the <Duplication Check> screen to search for planned or executed spectroscopic observations of NGC1275. We then use the <Proposal Abstracts> screen to understand the scientific aims of the matching observations which are found.

1. Start StarView as described in the “StarView Tutorial” on page 26, i.e., either `telnet stdata.stsci.edu` or `telnet stdata.stsci.edu`, login with username “archive” and password “guest”—or use your registered username and password, and type `xstarview` or `starview` from the command line.

This will bring up the <Welcome> screen (Figure 3.1 on page 28).

2. Click the [Duplication Check] button.¹ The <Duplication Check Search> screen will appear.
3. Specify the search criteria. In this case we wish to search for all spectroscopic observations of NGC1275. Qualify on instrument as `fos,hrs` since these are the two spectroscopic instruments (the comma separating the instruments is interpreted as an “or” by StarView, see also page 33).

Use the [SIMBAD Coordinates] button to determine the coordinates of NGC1275. When the SIMBAD window appears type “NGC1275” as shown in Figure 4.1. SIMBAD connects and returns the coordinates, fill-

1. Users of the terminal version can use the accelerator E+2.

ing the results into the RA and Dec fields on the <Duplication Check Search> screen along with a default circular search radius of 10'. Figure 4.2 shows the screen as it looks now.

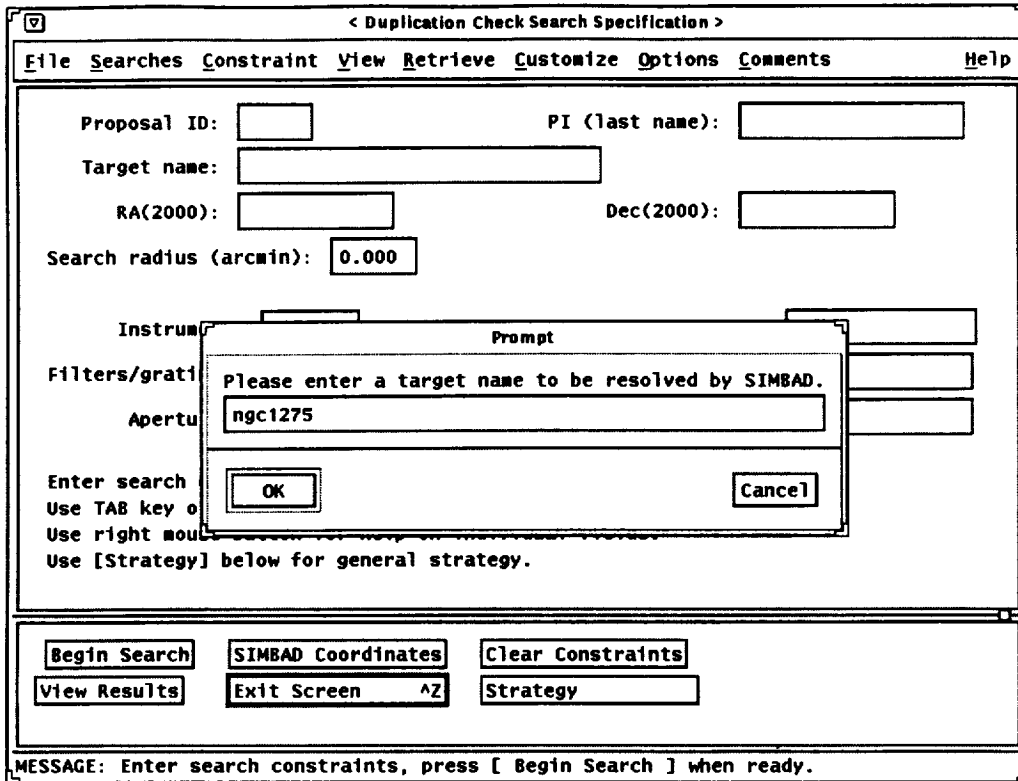


Figure 4.1: SIMBAD Coordinates Screen

< Duplication Check Search Specification >

File Searches Constraint View Retrieve Customize Options Comments Help

Proposal ID: PI (last name):

Target name:

RA(2000): Dec(2000):

Search radius (arcmin):

Instrument: Instrument Configuration:

Filters/gratings:

Apertures:

Enter search constraints in one or more of the fields above.
 Use TAB key or mouse to move between fields.
 Use right mouse button for help on individual fields.
 Use [Strategy] below for general strategy.

MESSAGE: Enter search constraints, press [Begin Search] when ready.

Figure 4.2: Duplication Check Screen with SIMBAD Coordinates

4. Initiate the search. Click on the **[Begin Search]** button to begin the search; a match is found and the screen switches to the <Duplication Check Results> screen (Figure 4.3). Step through the matching records one at a time or view the matching records a page at a time by switching to table row format (click the **[View Results as Table]** button).

File		Searches	Constraint	View	Retrieve	Customize	Options	Comments	Help
Proposal ID:	3550	PI:	JOHNSTONE						
Proposal Cycle:		Marked:	F						
Conflict type:	carryover	Exposure status:	planned - cycle						
Target name:	NGC1275								
J2000 RA:	3h 19m 48.19	Dec:	+41d 30m 42.						
Instrument:	FOS	Configuration:	FOS/BL						
Corrected Optics:	T	Optical mode:	ACCUM						
Filters/gratings:	G130H								
Apertures:	0.25X2.0								
Exposure length:	9100.000	Start:							
Dataset name:		Release date:							
Quality 1:									
Quality 2:									
<div style="display: flex; justify-content: space-between; margin-top: 10px;"> Step Forward Step Back Mark Dataset Retrieve Marked Data </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> Scan Forward Scan Back Unmark Data Write Result to File </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> Edit Search Constraints Mark All View Result as Table </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> Record 1 of 1 (in progress) Unmark All Strategy Preview </div> <div style="text-align: center; margin-top: 5px;"> Exit Screen ^Z </div>									
MESSAGE: More records available. Use record controls to view search results									

Figure 4.3: Duplication Check Results Screen

Remember, the <Duplication Check> screen displays *both* completed and pending observations. Inspect the “exposure status” field displayed on the screen to discern the status of each matching observation. Two special types of planned observations are identified via the the “conflict type” field; these are GTO-Reserved Targets for Cycle 5 or Carryover Proposals from Cycles 0–3. All other observations are normal Cycle 1–4 observations. The “optics corrected?” field will be true for WFPC2 observations and for FOC, FOS, and GHRS observations taken after COSTAR was in place, indicating that these observations are corrected for the aberration of the primary HST mirror.

Click on the [Strategy] button for more information about what constitutes a *conflict*, including the formal duplication policy.

Completed exposures which are public (with release dates less than today's date) can be previewed by clicking on the [Preview] button.

5. In this case, we find a matching observation (under proposal ID 3550) which may duplicate our planned observations. We can further investigate the potential of this observation as a conflict by examining the abstract for this proposal using the <Abstracts> screen.

To get to the <Abstract> screen, pull down the [Searches] menu from the menu bar on the top of the screen and choose "Proposal Abstract" (or you can return to the <Welcome> screen and choose [Other Searches], see also Figure 3.15 on page 46.

When the <Proposal Abstract Search> screen appears, enter the proposal ID and click on [Begin Search]. The abstract is then displayed (see Figure 4.4).

The screenshot shows a window titled "< Proposal Abstract Search Results >". At the top is a menu bar with options: File, Searches, Constraint, View, Retrieve, Customize, Options, Comments, and Help. Below the menu bar, search criteria are displayed in a form: Proposal ID: 3550, PI: JOHNSTONE, Science Category: GALAXIES & CLUS, TAC Panel: GALAXIES & CLUST, and Cycle: 91A. The Title field contains the text "DETECTION OF ABSORPTION LINES FROM GAS IN THE COOLING FLOW IN THE PERSEUS CLUSTER". Below the title is a Keywords field. The Proposal Abstract section contains the following text: "We wish to take a deep FOS spectrum of the Seyfert nucleus in NGC1275 to search for absorption lines of CIV(1550A), SiIV(1400A) and CII(1335). These data will provide a vital link between the cooling flow gas seen at X-ray energies and the much colder gas seen through the emission of optical lines and the absorption of X-rays. Detailed study of the relative line strengths will give information on the presence of heating mechanisms in this temperature range. Detection of these lines will also pr". At the bottom of the window, there are several control buttons: Step Forward, Step Back, Exit Screen ^Z, Scan Forward, Scan Back, Write Result to File, Edit Search Constraints, and Strategy. Below the buttons, it says "Record 1 of 1 (in progress)". At the very bottom, a message reads: "MESSAGE: More records available. Use record controls to view search results".

Figure 4.4: Displaying an Abstract

Remember, the <Duplication Check> and <Proposal Abstract> screens are designed only to help you to identify potential conflicts; you will have to decide whether the apparent conflicts are real. More information about what constitutes a conflict can be obtained by clicking the [Strategy] button on the <Duplication Check> screen.



The current <Duplication Check> screen requires you to check targets one at a time. We are currently developing the ability to simultaneously cross-correlate a list of target RA and Dec positions against the catalog. When available (most likely by mid-June), you will be able to select the **[Cross Correlation]** button from the command area of the <Duplication Check> screen. More information about this capability will be provided as part of the Strategy for the <Duplication Check> screen when the feature is enabled.



Forms

In This Appendix...

HST Archive Account Registration / 58

HST Archival Data Request / 59

HST Archival Research Visit Request / 61

This appendix provides forms for requesting accounts, data tapes of files from the archive, or visits to the Space Telescope Science Institute (STScI). PostScript versions of these forms are also available in the `forms` subdirectory of the `documents` directory on the archive host workstations.

Please photocopy these forms and use them as needed.

HST Archive Account Registration

Welcome to STScI...

The Space Telescope Science Institute welcomes users to the HST data archive. Registration entitles you to a personal account on one of two workstations—your choice of VMS or Unix. Only registered users can retrieve data. Unregistered users can still access the HST catalog using the guest account.

To request an account, complete this form and mail it to the address at the bottom of this page: your account will be activated within 2 working days after it is received at STScI.

Contact Info...

Full Name: _____
Postal Address: _____

Country: _____
Phone: _____
E-mail Address: _____
FAX Number: _____

System Preference...

Which host system do you prefer? (Choose *one*)

VMS (stdata.stsci.edu) Unix (stdatu.stsci.edu)

Users of the STDATA and STDATU accounts are expected to maintain their accounts in a secure manner. This includes choosing reasonable (non-simple) passwords, changing passwords often, and notifying archive@stsci.edu immediately if there is any evidence of break-in. Users should not share accounts. Note that there is a quota on the total amount of archive data that an individual can retrieve and this limit is based on the user name. Archive accounts are being set up with limited access to Institute software and are not for general purpose computing. Use of these accounts will be monitored.

Check here to certify that you have read the above security statement and agree to abide by it

Special Requests or Comments...

Mail Form To: HST Archive
Data Systems Operations Branch
Space Telescope Science Institute
3700 San Martin Drive
Baltimore, Maryland 21218

FAX: (410) 338-5090

STScI Use Only

Date Received: _____
Date Processed: _____

HST Archival Data Request

Contact Information

Full Name _____

E-mail Address _____

Postal Address (for Shipping Data) _____

Country _____

Phone _____ FAX _____

Datasets Requested

List rootnames of all requested datasets below. You will receive all of the files associated with each dataset unless you request specific files.

Tape Format

Data will be supplied on magnetic tape in FITS format. Please select FITS file format and media from the following options (see notes on back of this page).

FITS Files

- Use ST default FITS*
- IEEE floating point
 - All groups in one file
 - Blocking factor 10

- Special requirements*
- If you cannot use the HST default FITS format, you may specify your special needs here. These may consist of the following:
- Scaled integer (inappropriate for some data)
 - Blocking factor x (where x is less than 10)
 - Groups split into separate FITS files
- HST Data Archive personnel will contact PIs with special needs to clarify the need.

Media

- 8mm Exabyte cassette
- 6250 bpi 9-track 2400'
- 1600 bpi 9-track 2400'



*Continued
on other side*

Return Form to:

HST Archive
 Data Systems Operations Branch
 Space Telescope Science Institute
 3700 San Martin Drive
 Baltimore, MD 21218

FAX:
 (410) 338-5090
 E-mail:
 archive@stsci.edu

STScI Use Only

Date Received _____

Date processed _____

Notes on FITS Format and HST Defaults

HST data are stored as real numbers and may suffer loss of precision when written in formats other than the HST default of IEEE FITS format (for example, when converting to scaled integer without writing groups as separate FITS files). HSP data and FOS polarimetry data *require* the double precision of the HST default. In addition, small inaccuracies can be introduced in the HRS wavelength scale and in the zero values in FOS spectra when scaled integers are used. For these reasons, we ask you to use the HST default if at all possible.

Although all astronomers are urged to use the HST default, we will continue to honor some special formats, for the time being. The special formats are: "Scaled integer" instead of IEEE floating point; "Groups split into separate files" instead of using an extra dimension in the same file; and "Blocking factor" equal to a number less than 10. The HST data archive personnel will contact anyone who requests a special format.

The following media are available:

- 9-track tape (1600 and 6250 bpi)
- 8mm Exabyte cartridge

Only astronomers with very old 9-track tape drives should consider a blocking factor of 1 (the default is 10) because of the small buffers on early tape drives. All modern tape drives and all Exabyte tape drives are capable of handling the default blocking factor, which uses tape more efficiently.

HST Archival Research Visit Request

Contact Info...

Full Name: _____
 Institution: _____
 Postal Address: _____

 Phone: _____ FAX Number: _____
 E-mail Address: _____

Funding...

Is your archival research a funded HST Archival Research Proposal?

Yes, Proposal ID: _____ No

Unfunded researchers should attach a page describing, in detail, the scientific objectives of their archival research program.

About Your Visit...

What part of your archival research program will be accomplished during your visit? (Please be specific) _____

Duration of Visit: _____

Preferred Dates for Visit: _____

Datasets to be Used (by name, or description): _____

Mail Form To: HST Archive
 Data Systems Operations Branch
 Space Telescope Science Institute
 3700 San Martin Drive
 Baltimore, Maryland 21218

FAX: (410) 338-5090

STScI Use Only

Date Received: _____

Date Processed: _____

Index

A

- account
 - establishing 4, 14
 - guest users 14
- account request
 - form 58
- acknowledgment
 - archival research 2
- analyzing data
 - STSDAS 20
- archive
 - alternate sites 3
 - description 1
 - host machines 9
 - interface, StarView 4
 - retrieving data 37, 43
 - retrieving reference files 45
 - searching 29
- Archive Retrieval screen 37

C

- calibration
 - reference files 45
- commands
 - available on archive host
 - computers 12
 - StarView 28
- conflicting proposal
 - finding 51
- conversion
 - VAX and Sun formats 16
- coordinates
 - from SIMBAD 31

D

- Data Management Facility
 - described 3
- datasets
 - availability of 2
 - retrieving from archive 4, 15, 37
 - size of files 40
- documentation
 - supporting archival research 18
- documents directory
 - contents of 20
- duplicate observation
 - finding 51
- Duplication Check screen 51

E

- exposure catalogs
 - retrieving from archive 21

F

- file size
 - by instrument 39
- FITS format
 - writing archive files to 17
- format conversion
 - between VAX and Sun 16
- forms
 - retrieving from archive 21
 - user registration 58
 - visit request 61
- FTP
 - retrieving data 17, 45

H

host machines
for archival use 9
HST Data Handbook
described 20

L

library
submitting preprints 2
logging in
to archive host computer 10
logging out
from archive host computer 11

M

marking observations
retrieval 37
media
specifying tapes or disk 38

N

news
archive status messages 11

O

observation
finding duplicate 51
operators
constraining search 33
Other Searches screen 46

P

preprint
submitting to STScI Library 2
proprietary period
length of 2
public data
proprietary period 2
publication
research based on archives 2

Q

Quick Search Results screen 34
Quick Search screen 30

quotas
size of 4

R

readnews command
archive news messages 11
reference files
retrieving from archive 45
registration
as archive user 14
request ID 41
retrieval
marking observations 37
Retrieval Request - Media Op-
tions screen 40
Retrieval Status screen 43

S

searching
catalog using StarView 29
stepping through
observations 34
SIMBAD
coordinate resolver 31
StarView
command usage 28
described 4, 25
distributed version 22
exiting 43
retrieving data 37
retrieving reference files 45
searching archive 29
starting 15
terminal version 27
tutorial 26
X-Windows version 27
ST-DADS
described 3
STDATA
archive host computer 10
STDATU
archive host computer 10
STScI
visiting 6

STSDAS

described 20

Sun

converting files for VAX 16

support services

described 5

T

Table Format screen 34

target cross-correlation

corr program 22

telnetlogging in to archive host
computer 10**tutorial**

StarView usage 26

U

user support 5

V**VAX**

converting files for Sun 16

visit

request form 61

visiting STScI

for archival research 6

W

Welcome screen 27

X**xstarview**

starting 27

