



APT Tools & Starview Status Review

Feb 6, 2001



APT Overview

Steve Lubow



Agenda

- ❖ Provide snapshot of recent progress and plans
- ❖ General Info (10 min - S. Lubow)
- ❖ Visual Target Tuner (20 min - R. Lucas)
- ❖ Bright Object Checker (20 min - R. Downes)
- ❖ Starview & Starview/VTT (30 min - M. Donahue)
- ❖ Exposure Time Calculators (20 min - C. O'Dea)
- ❖ Instrument Scientist Support (10 min - T. Krueger)



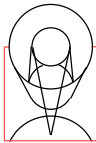
Introduction

- ❖ Review of APT tools and Starview
- ❖ Cover what has been done and what is being planned
- ❖ Not covering Phase 1 tool, APT GUI, and Orbit Planner.

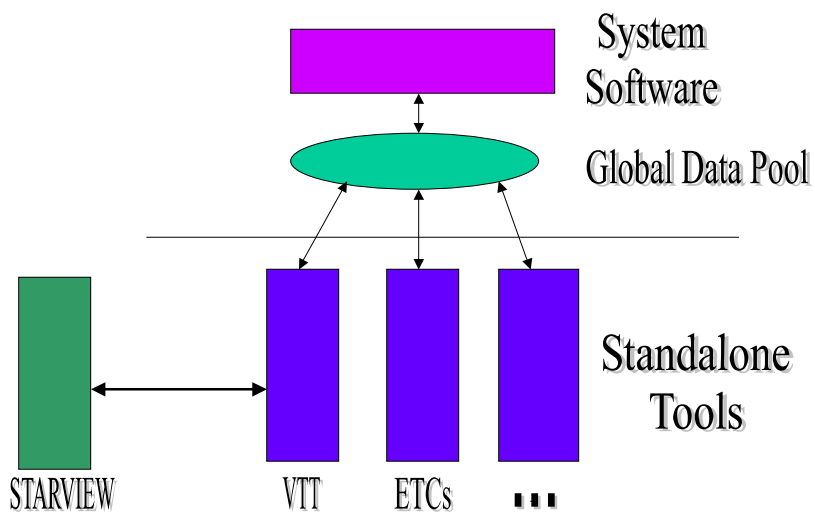


APT User Group

- ❖ M. Donahue (AB)
- ❖ R. Douglas (APST)
- ❖ R. Downes (HD)
- ❖ E. Hopkins (SET)
- ❖ T. Krueger (APST)
- ❖ S. Lubow (SUSD)
- ❖ R. Lucas (OPT)
- ❖ M. Mutchler (SISD)
- ❖ C. O'Dea (SISD)
- ❖ K. Peterson (APST)



APT Architecture





Tools

- ❖ Tools are plugins to APT
- ❖ Tools can run standalone
- ❖ In APT, tools will share info – APT is greater than the sum of the standalone tools



Schedule

Tool \ TimeLine	Cycle 10 Phase 1 Jun 2000	Cycle 10 Phase 2 Jan 2001	Cycle 11 Phase 1 Jun 2001	Cycle 11 Phase 2 Jan 2002	Cycle 12 Phase 1 Jun 2002	Cycle 12 Phase 2 Jan 2003
Visual Target Tuner	X	X	X	X	X	M
ExpTime Calculator		X	X	X	X	M
Bright Object Tool		X	M	M	M	M
Archival Research			X	M	M	M
Orbit Planner				X	X	M
Visit Planner				X	X	M
Top Level GUI				X	X	M
Architecture		X	X	X	X	M
Phase 1 Tool					M	M
Help Wizards/Tool Tips		X	X	M	M	M

X – Release doesn't contain all major capabilities (Incremental Release)

M – Contains all major capabilities (Maintenance Mode)

Detailed Schedule <http://apt.stsci.edu>



Visual Target Tuner Status

Ray Lucas



Visual Target Tuner Team

- ❖ Science Leads
 - Ray Lucas
 - Megan Donahue
- ❖ Developers & Testers
 - Frank Tanner, Holly Abraham
 - Karla Peterson



Current APT/VTT Status

- ❖ Delivered v2.0 for Cycle 10 Phase II on 8 January, 2001
- ❖ Mostly involved changes to layout (e.g. “Apertures” became “Observations”, and etc.) after evaluation of feedback from Phase I release period; also included some GSFC reorganization of underlying code and addition of layering capability
- ❖ Minor release (v2.1) on 1-2 February, 2001 with mostly minor items and fixes



Current APT/VTT Status (cont'd)

- ❖ VTT Build 2.0 OPRs (8 January, 2001)

Build ID: APT-VTT-2.0

Date Installed: Jan-08-2001

- [41023](#) Export to Text – specified orient angle was negative. Shouldn't be. Check t
- [41043](#) VTT Export to Text Requirements
- [41045](#) Change Aperture menu to Observation menu
- [41554](#) Deliniate two uses of apertures
- [41725](#) Batch image retrieval requires write access to code tree
- [41959](#) Include documentation on extensibility again
- [42224](#) Add saving FITS file to saving session
- [42401](#) Improve the aperture shapes for ACS and WFPC2
- [42427](#) Choose a better color for the default catalog color
- [42430](#) Save session should recognize a new session
- [42846](#) Include image_retriever script when building VTT
- [42888](#) Help user avoid overlaying images in different areas of the sky
- [42997](#) Change wording of menu item

13 PRs in this build



Current APT/VTT Status (cont'd)

❖ VTT Build 2.1 OPRs (1-2 February, 2001)

Build ID: APT-VTT-2.1

Date Installed: Feb-01-2001

- [41424](#) Update allowed orientation when aperture position changed by centroiding.
- [41791](#) Green/Red Orientation circle doesn't refresh when changing aperture
- [42470](#) Unhelpful pop up message about coordinates
- [42590](#) Make it easy for VTT installers to avoid native threads problem
- [42995](#) image_retriever does not work with size and name
- [43016](#) Tag problem in APT
- [43028](#) Change Menu Names
- [43074](#) Side effect of "Save in HST RPS2 format"
- [43109](#) Orientation tolerance not being saved to RPS2 format output
- [43153](#) Batch Image Retrieve retrieves images from wrong survey

10 PRs in this build



Future Plans

- ❖ Evaluate feedback from Cycle 10 Phase II; look for common themes for prioritization, e.g. logarithmic image display requested by 3 external users
 - Some statistics:
 - Downloads per OS, etc.:
 - Unix: 9 external; 2 internal
 - Windows: 4 external; 3 internal
 - Missed stats from 1/1-18; covers 1/19 – 31
 - Substantive feedback from 8 users so far, all overwhelmingly positive, though small numbers



Future Plans (cont'd)

➤ Some sample comments:

- “I am struggling a bit with VTT. It is a nice tool (how did HST observers do this before it was available?!!) but it takes a bit of practice.”
- “Below are the things that went wrong or that I think can be improved. Although the list is long, I’m extremely positive about the VTT. You did a wonderful job.”
- “I worked with VTT yesterday and I can provide some feedback. Most of this will be complaining so I should start with a congratulations to those responsible for VTT. It will be very useful to me and I like it a lot! The ability to visualize and adjust the slit placement alone is a good



Future Plans (cont'd)

➤ Some sample comments (cont'd):

- ...reason to use it for phase 2. With all of the other features, it will continue to be a great research tool after phase 2 is over!”
- In Tony Krueger’s words, the recurrent theme is: “I like this tool. I like this tool enough to spend the time to help you make it even better.”



Future Plans (cont'd)

- ❖ Prioritize VTT work so that enhancements are not made to features slated for substantial later change
- ❖ Work on both the GUI and the underlying internal software to separate concepts (objects) which are currently linked (such as exposures and targets); prerequisite for the next item...
- ❖ Extend the VTT to represent all Phase II syntax related to superimposing targets and apertures on the sky (e.g. Pos Targs, patterns, etc.)



Future Plans (cont'd)

- ❖ Update the VTT to work with the APT within the new structural framework and conventions of the APT as it evolves; achieve a more full integration of the VTT as part of the APT at all levels while still retaining its ability to also function extremely well as a stand-alone tool which can be both adopted and adapted by other observatories for their own use
- ❖ VTT data model must be in concordance with APT; VTT graphical conventions must fit APT



Future Plans (cont'd)

- ❖ Next anticipated major release is in ~June 2001 in time for Cycle 11 Phase I
- ❖ VTT provides support to Starview VTT (Megan Donahue's talk) and the Bright Object Tool ROBOT (Ron Downes' talk).



Future Plans – Some Final Thoughts

- ❖ Need to begin soon (within next month or two) on Pos Targs, patterns, etc. since ultimately important for full Phase II capabilities, and may require longer lead time to develop and integrate into new APT concepts, etc.; enlist some SISD support?
- ❖ Ongoing OPR reviews with both integration into revised APT and stand-alone capabilities in mind
- ❖ Need to continue to re-evaluate resources required as VTT and APT progress toward an ever more complete replacement of RPS2, etc.



RObust Bright Object Tool Status

Ron Downes



RObust Bright Object Tool Team

- ❖ Science Leads
 - Ron Downes
 - Ray Lucas
- ❖ Developers & Testers
 - Jesse Doggett, Mike Asbury
 - Karla Peterson
- ❖ Science Support
 - Claus Leitherer, Mike Potter (STIS)
 - Stefano Casertano, Sylvia Baggett, Al Schultz, Jennifer Mack (WFPC2)
 - Colin Cox (ACS)
 - Ed Nelan (FGS)
 - Ron Gilliland (SISD)



RObust Bright Object Tool

- ❖ What is it? – A Refresher
- ❖ Why Do We Need it? – The Benefits
- ❖ How Does it Work? – The Guts
- ❖ Where are We Now? – Interactive Version
- ❖ Where are We Going? – IS Batch Version



What is ROBOT?

- ❖ A tool to check each exposure in a program for FIELD objects that could cause health-and-safety concerns, or could impact scientific value of the observation (e.g. bleeding)
- ❖ Will be used by Instrument Scientists in their review of the Phase II program
- ❖ Will be used by GOs in preparation of their program



Why do We Need It?

- ❖ Instrument Scientist Benefit:
 - Present tool takes V magnitude from GSC1, and ASSUMES all objects are O5 stars to trigger health-and-safety no science impact checks are performed (e.g. saturation)
 - ROBOT will utilize color information from GSC2 to decrease the effort needed to identify these “false” hits, as well as analyze “true” hits
- ❖ GO Benefit:
 - GOs can do health-and-safety checks prior to submission, and “correct” problem objects up front (without waiting for STScI to notify them)
 - GOs can do science impact checks



How does it work? – the Guts

- ❖ Based on position and SI/aperture, access the GSC2 to get color information for all objects in the macro-aperture.
- ❖ Convert F and J colors to V and B-V
- ❖ Convert B-V to spectral type assuming all stars are unreddened MS stars
- ❖ For H&S checks, also assume
 - All stars with $B-V < +0.1$ are O5 due to degeneracy of spectral types at bluest colors
 - All stars brighter than some V_{crit} (spectral element dependent) are O5, to account for reddened O stars appearing as later-type stars



How does it work? (Continued)

- ❖ Obtain exposure information
- ❖ Determine count rates and total counts for each field object via a lookup table
- ❖ Compare count rates and total counts with limits table for each object
- ❖ Display results (graphically and in tabular form)

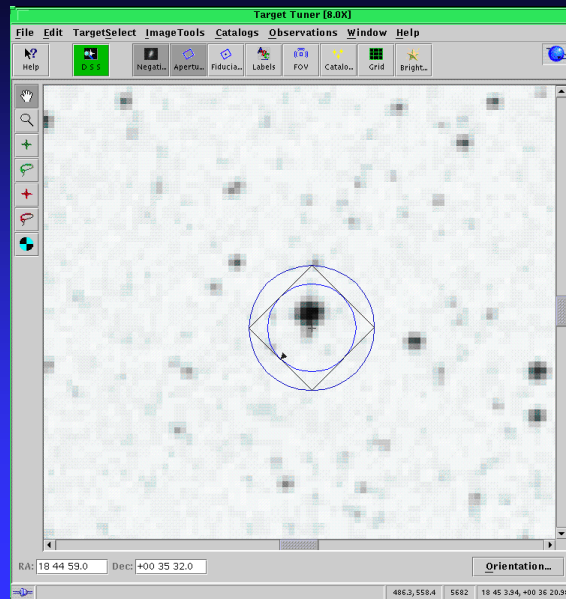


Where are We Now? – Interactive Version

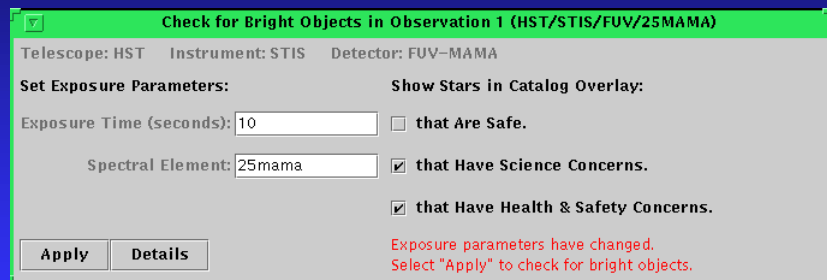
- ❖ Main engine (F, J colors -> count rates and total counts) has been completed and verified for FGS, STIS, and WFPC2; ACS is almost completed; requirements for NICMOS available
- ❖ An interactive GUI interface has been created and tested by STIS and WFPC2
- ❖ GUI has been release to 4 Cycle 10 PIs with MAMA imaging programs (GSC2 delay prevents wider usage at this time)



VTT with Aperture Set

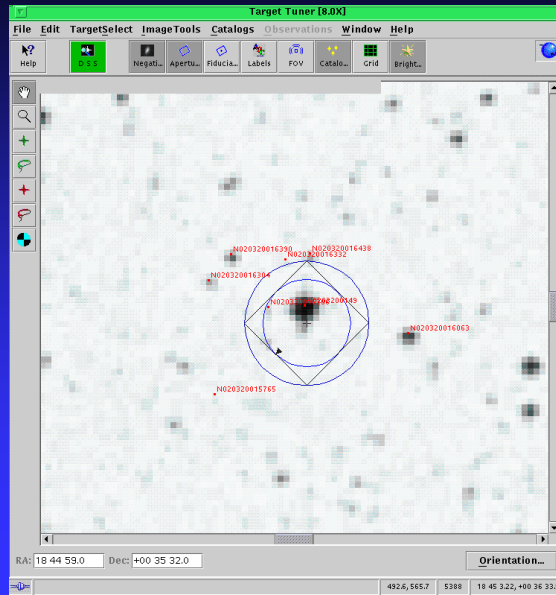


Dialog Box





VTT with Flagged Objects



Summary Table

No Name							
GSC2 ID	RA	Dec	V	B-V	Spectral Type	Signal	Reason
N020320016390	18 45 0.44	+00 35 51.61	18.13	1.25	K4	1.0511E5 electrons	Saturation
N020320016304	18 45 0.86	+00 35 44.36	18.92	1.73	M4	1.0511E5 electrons	Saturation
N020320016063	18 44 57.07	+00 35 29.22	16.68	1.75	O5	9.7632E2 counts/second	Local Health and Safety
N020320015765	18 45 0.75	+00 35 11.7	unknown	unknown	unknown		unknown
N020320016438	18 44 58.94	+00 35 51.87	19.36	2.02	M4	1.0511E5 electrons	Saturation
N020320016206	18 44 59.73	+00 35 36.67	unknown	unknown	unknown		unknown
N020320016332	18 44 59.4	+00 35 50.14	unknown	unknown	unknown		unknown
N0203200149	18 44 59.03	+00 35 37.1	14.1	1.18	O5	1.0511E4 counts/second 1.0511E5 electrons	Local Health and Safety Saturation



Where are We Going? – IS Batch Version

- ❖ Will get exposure information from database and run entire program in batch mode
- ❖ Will inform IS which exposure have potential
- ❖ IS will examine each exposure as in interactive version
- ❖ Will be available for Cycle 10 Phase II review



Starview & Starview/VTT Status

Megan Donahue



Starview & Starview/VTT Tool Teams

- ❖ Starview & Starview/VTT Science Lead
 - Megan Donahue
- ❖ Developers
 - Niall Gaffney (Starview)
 - Molly Brandt (Starview)
 - Fred Romelfanger (APT)
- ❖ System Management
 - Ed Hopkins
- ❖ Testing & User Support
 - Sara Anderson



Current Status: StarView 6.1

- ❖ Released November 2000.
- ❖ Version contains all xstarview 5.4 functionality, including archive account management and SQL capture.
- ❖ Satisfies requirements defined by users, project scientist, and developers.
- ❖ Significant improvements made to the qualification screen behavior and other features based on user feedback from 6.0.

2/7/01



Coming in StarView 6.2

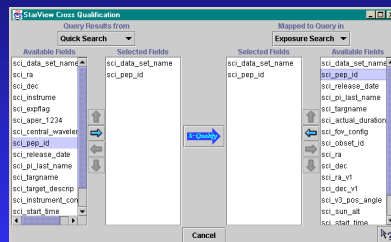
- ❖ First priority: improved help features.
- ❖ Quick button loads default “quick” form.
- ❖ SV6.2 will run under Java 1.2.2 and 1.3.
- ❖ Significant speed improvements in queries and response (threading).
- ❖ Literature references and smart previews (interface with MAST information services).
- ❖ VTT/SV interface.
- ❖ “Save SQL” menu option.

2/7/01



More in StarView 6.2

- ❖ Improved CrossQualification user interface.

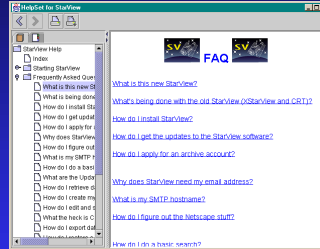


- ❖ Non-JDBC Communications in XML (under the hood).



Help in StarView 6.2

- ❖ Would like to coordinate help system with APT.
- ❖ Using JavaHelp for help
- ❖ Implemented 3 roads to help:
 - JavaHelp help browser
 - Help with the “next step”.
 - Context-sensitive help button.
- ❖ Java Servlet created to serve helpsets via standard web browser.
- ❖ Help map, indexes, and html stored on server.



What's not in SV6.2?

- ❖ Coordinate search results sorted by separation (server side change).
- ❖ Exclusion of calibration files from science searches.
- ❖ Multi-mission browsing.



User Feedback and Focus Groups

- ❖ Frequent users and help desk users have been identified.
- ❖ Plan: a short survey including a question about interest in participating in a short focus group.
- ❖ Informal lunchtime focus groups (4-5 users and the StarView team) will get together and explore options for providing help, interface improvements, and future StarView functionality.



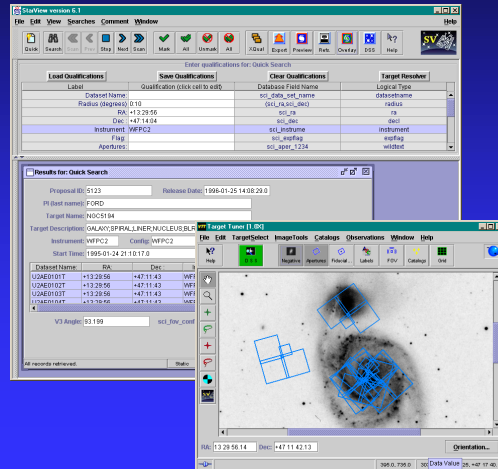
StarView 6.3

- ❖ Multi-archive: retrieval and searches.
 - Initially MAST (IUE, EUVE...) services provided via StarView.
 - Document interfaces to be provided to external archives (Chandra???)



StarView and SV/VTT

- ❖ StarView as the archive tool for APT.
- ❖ VTT can be selected as a graphic interface to StarView.
- ❖ JIPA still usable for those not needing VTT (smaller memory footprint).



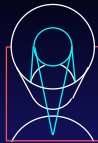
StarView and SV/VTT

- ❖ Prototypes demonstrated at the November ADASS and Jan. AAS.
- ❖ Multiple exposures (apertures) can be selected & overlaid on DSS or other image in VTT.
- ❖ Two APT features are still required:
 - “Archive” apertures are still fluid.
 - Cannot click on VTT “Archive” aperture and have its information displayed in SV.
- ❖ SV features required:
 - Preview server to serve XML description of apertures.



Next Level for SV/VTT

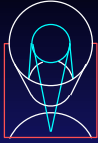
- ❖ Graceful backing out from VTT display.
- ❖ Displaying preview images in VTT without overwriting the DSS/planning window (previews currently can only use JIPA interface).
- ❖ Displaying preview images inset in apertures on the DSS.



Schedule Issues

- ❖ SV team lost Scott Binegar (1 FTE)
- ❖ SV/VTT will lose Fred Romelfanger at the end of Feb. What is not done for VTT by then will go into the general APT queue.
- ❖ Some support to accommodate OTFR needed.

2/7/01



Schedule

- ❖ Informal survey and focus groups through February 2001.
- ❖ StarView 6.2: March/April 2001.
- ❖ StarView/VTT in 6.2 (To support proposal development for Cycle 11?)
- ❖ StarView 6.3: pending resources. Estimate Sep. 2001.



APT/ETC Status

Chris O'Dea



Exposure Time Calculator Team

- ❖ Science Leads
 - Chris O'Dea
 - Max Mutchler
- ❖ Developers & Testers
 - Donald Mclean, Anand Sivaramakrishnan, Hemant Shukla
 - Leslie Zimmerman
- ❖ Science Support
 - Chris O'Dea (chair)
 - Santiago Arribas
 - Francesca Boffi
 - Ralph Bohlin
 - Chris Hanley
 - Patricia Knezek
 - Kailash Sahu



Status of APT/ETC

- ❖ Motivation & Goals
- ❖ Background
- ❖ Science Input
- ❖ Current Status
- ❖ How to Use the APT/ETC
- ❖ Development Priorities
- ❖ Current Issues



Motivation & Goals

- ❖ The web ETC has become a popular and “essential” proposal preparation tool which should be included in the APT.
- ❖ The APT ETC is a JAVA tool which provides a uniform interface and uniform output for all the instruments.
- ❖ It should be intuitive, fast, and easy to use.
- ❖ The APT ETC will allow communication with other APT tools.



Motivation & Goals II

- ❖ Output will be both tabular and graphical.
- ❖ APT ETC will include additional functionality over the current CGI ETCs.
- ❖ Eventually, the APT version will replace current web versions - with some savings due to elimination of redundant effort.



Background

- ❖ A simple “proof-of-concept” prototype of a Java ETC was created by the Scientist Expert Assistant (SEA) group at GSFC with some input from ACS and STIS.
- ❖ STScI took ownership of the tool in mid-2000.



Development Effort

- ❖ Development is being carried out here at STScI.
 - ◆ debug ETC
 - ◆ add scientific functionality (one SI at a time)
 - ◆ Improve GUI



Science Input

- ❖ ETC User's group provides input on scientific requirements and user interface
- ❖ Francesca Boffi is verifying numerical accuracy for ACS
- ❖ ETC demo Feb 01



Current Status

- ❖ First release Jan 9, 2001 contained ACS imaging (no ramps) and spectroscopy
- ❖ Second release Feb 01, 2001 fixed bugs in spectroscopy
- ❖ Scientific requirements for ACS Coronagraph, NICMOS, and STIS are complete

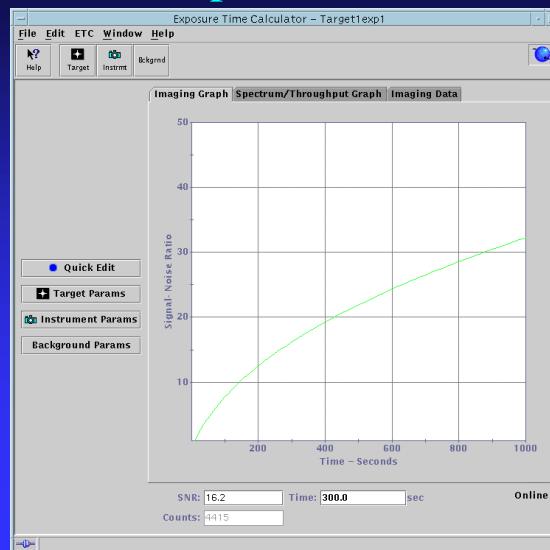


How to Use the APT ETC

- ❖ type hot-etc to start
- ❖ use Target, Instrument, and Background menus to specify exposure parameters
- ❖ calculation is carried out when you click Apply
- ❖ specify desired SNR or exposure time at bottom of main window

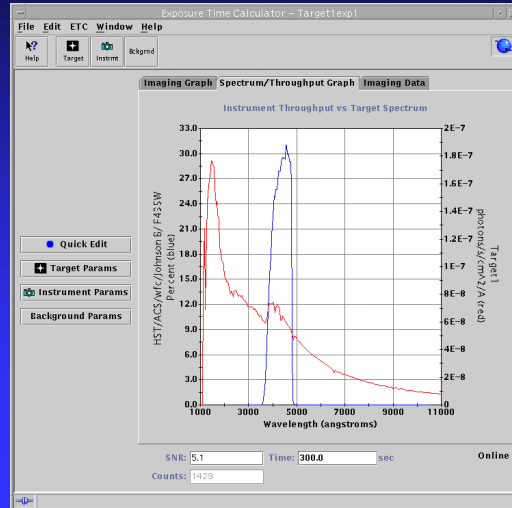


Current Top-level ETC Screen





Target Spectrum & Filter Throughput Graph



Instrument Parameter Menu

Instrument Parameters - TargetExp1

File Edit Window Help

Help

Instrument: HST/ACS Mode: Imaging

Parameters Throughput Properties

Detector: wfc

Filter: Johnson B/ F435W

Gain: 1 e-/ADU

Box Size: 5 n x n pixels

CR Split: 2

Apply Reset Close



Development Priorities

- ❖ OCM integration and Top Level GUI changes
- ❖ ACS Ramps and Coronagraph
- ❖ NICMOS
- ❖ STIS



Current Issues

- ❖ OCM integration under discussion by ETC user's group. Need to implement Phase II vocabulary in a user friendly way
- ❖ Effort for web-based ETC still being scoped
- ❖ Schedule for implementation of NICMOS and STIS still being worked



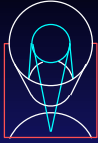
Instrument Scientist Support

- ❖ Support for Feb-June 2001. Beyond APT user Group
- ❖ Visual Target Tuner
 - 1-2 Instrument Scientists for usability testing and helping define pos targ & pattern capabilities. 2-4 hrs per week March till June
- ❖ Starview2/VTT Tool
 - 1 Instrument Scientist for usability testing on for the tool. 2-4 hrs per week in Feb-March Timeframe.
- ❖ Exposure Time Calculator
 - 1 ACS Instrument Scientist to help test the Coronagraphic capability. 2-4 hrs per week in March-April timeframe
 - 1 NICMOS Instrument Scientist to help test the NICMOS ETC. 2-4 hrs per week in the April-May timeframe.



Instrument Scientist Support

- ❖ Bright Object Checker Tool
 - 1 STIS/WFPC2 IS for two days in early March
 - ACS & NICMOS IS for 3 days for engine testing in beginning of April
 - All instruments (FGS, WFPC2, STIS, NICMOS, ACS) one day of GUI testing in beginning of May
- ❖ Orbit Planner Tool
 - Representatives from the various instrument groups to define/review requirements and evaluate the GUI. 2 hrs per week in the March-June timeframe.



The End

- ❖ For comments or concerns about this presentation, contact apt-req@stsci.edu
- ❖ To report problems with any of the tools, send mail to help@stsci.edu
- ❖ Check out the APT web site for other information about this project
 - <http://apt.stsci.edu>