12748 - Joint Chandra and HST Monitoring of the Crab Nebula

Cycle: 19, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

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VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) V-CM-TAU	ACS/WFC	1	30-Sep-2011 21:39:06.0	yes
02	(1) V-CM-TAU	ACS/WFC	1	30-Sep-2011 21:39:10.0	yes
03	(1) V-CM-TAU	ACS/WFC	1	30-Sep-2011 21:39:13.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
04	(1) V-CM-TAU	ACS/WFC	1	30-Sep-2011 21:39:16.0	yes
05	(1) V-CM-TAU	ACS/WFC	1	30-Sep-2011 21:39:19.0	yes
06	(1) V-CM-TAU	ACS/WFC	1	30-Sep-2011 21:39:22.0	yes

6 Total Orbits Used

ABSTRACT

In 2010 Sep the Crab surprised the astrophysical community with a powerful 4-day-long gamma-ray flare, detected by the Agile and Fermi satellites. Chandra and HST images taken post flare, were limited by the lack of a reference image taken before the flare. While the study of future flaring activity will be covered by a companion TOO proposal, here we propose a joint Chandra HST program. The scientific purpose of this proposal is to: 1) establish an X-ray and optical baseline of the system prior to any gamma-ray flare as an aid for establishing the location of the flare and, 2) to identify and quantify the spatial and spectral variations in X-rays and/or the optical over time.

OBSERVING DESCRIPTION

The program is part of a multiwavelength (X-ray and optical) monitoring campaign of the Crab pulsar and inner Nebula. It consists in a series of 6 ACS imaging observations in the F550M filter, to be performed quasi-simultaneously (within 10 days maximum) with Chandra/ACIS imaging observations. We ask to observe the target in January, February, March, April, August, September 2012. For each epoch, we have selected a time window (spanning 10 days) in which the target is visible. The HST visits (as well as the Chandra ones) should be scheduled within such windows. The same instrumental setup will be adopted for each visit. To fully cover the FOV of our Chandra observations (150"x150"), we will use the ACS/WFC with the WFC aperture. A box dithering pattern will be implemented to fill the inter-chip gap as well as to reject cosmic ray hits. Setting an exposure of 500 s for each position of the dithering pattern results in 2000 s exposure time per visit, which is well suited to achieve our goals and allows for an optimal use of the orbital visibility window.

Visit

Proposal 12748, Visit 01 Sat Oct 01 01:39:26 GMT 2011

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: SCHED 80%; BETWEEN 08-JAN-2012:00:00:00 AND 19-JAN-2012:00:00:00

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=3.5 Line Spacing=0.5	Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides=85.28 Center Pattern=false		(1)

Fixed Targets

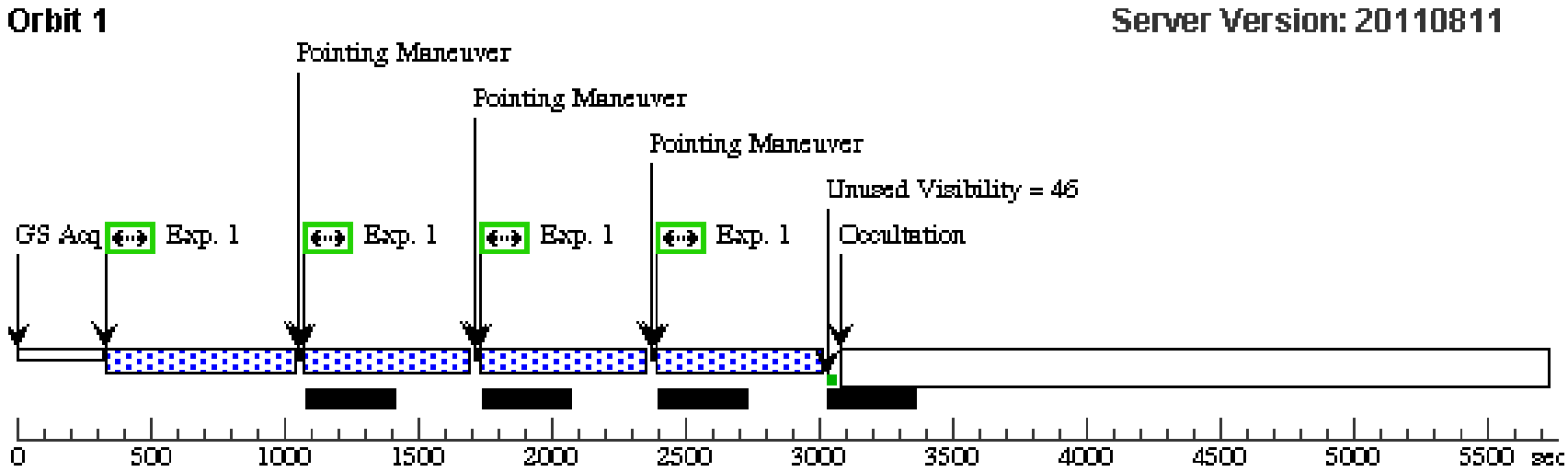
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-CM-TAU	RA: 05 34 31.9500 (83.6331250d) Dec: +22 00 52.10 (22.01447d) Equinox: J2000		V=16.5	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(1) V-CM-TAU	ACS/WFC, ACCUM, WFC1	F550M			Pattern 1, Exps 1-1 in Visit 01 (1)	500 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	*[1]*

Orbit Structure



Visit

Proposal 12748, Visit 02 Sat Oct 01 01:39:27 GMT 2011

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: SCHED 80%; BETWEEN 10-FEB-2012:00:00:00 AND 21-FEB-2012:00:00:00

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=3.5 Line Spacing=0.5	Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides=85.28 Center Pattern=false		(1)

Fixed Targets

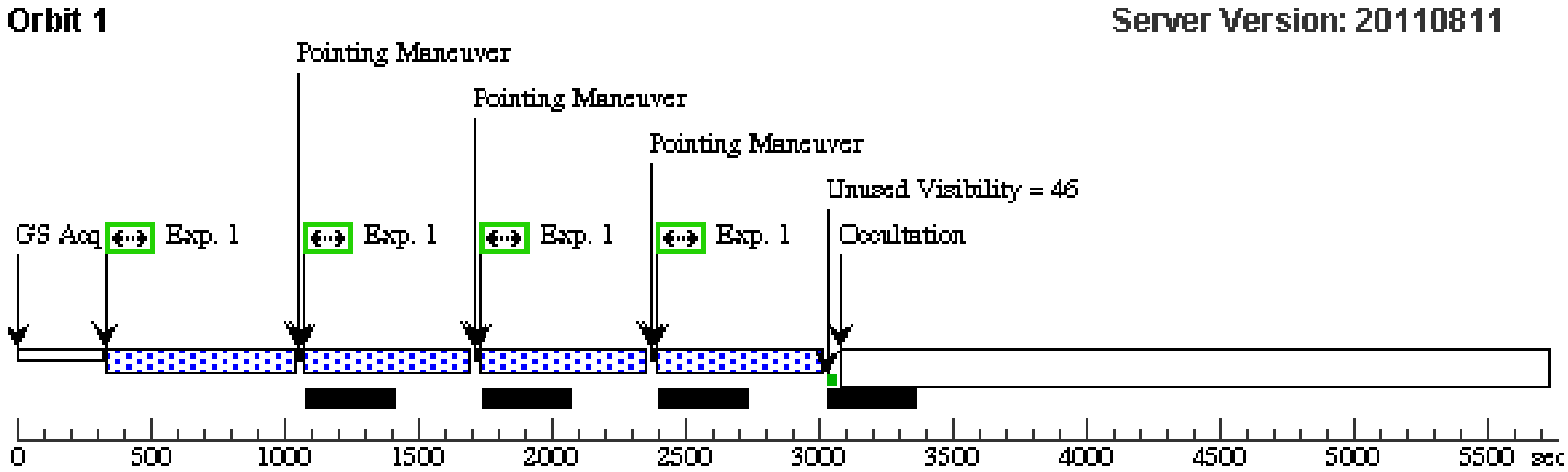
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-CM-TAU	RA: 05 34 31.9500 (83.6331250d) Dec: +22 00 52.10 (22.01447d) Equinox: J2000		V=16.5	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(1) V-CM-TAU	ACS/WFC, ACCUM, WFC1	F550M			Pattern 1, Exps 1-1 in Visit 02 (1)	500 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	*[1]*

Orbit Structure



Visit

Proposal 12748, Visit 03 Sat Oct 01 01:39:28 GMT 2011

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: SCHED 80%; BETWEEN 10-MAR-2012:00:00:00 AND 21-MAR-2012:00:00:00

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=3.5 Line Spacing=0.5	Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides=85.28 Center Pattern=false		(1)

Fixed Targets

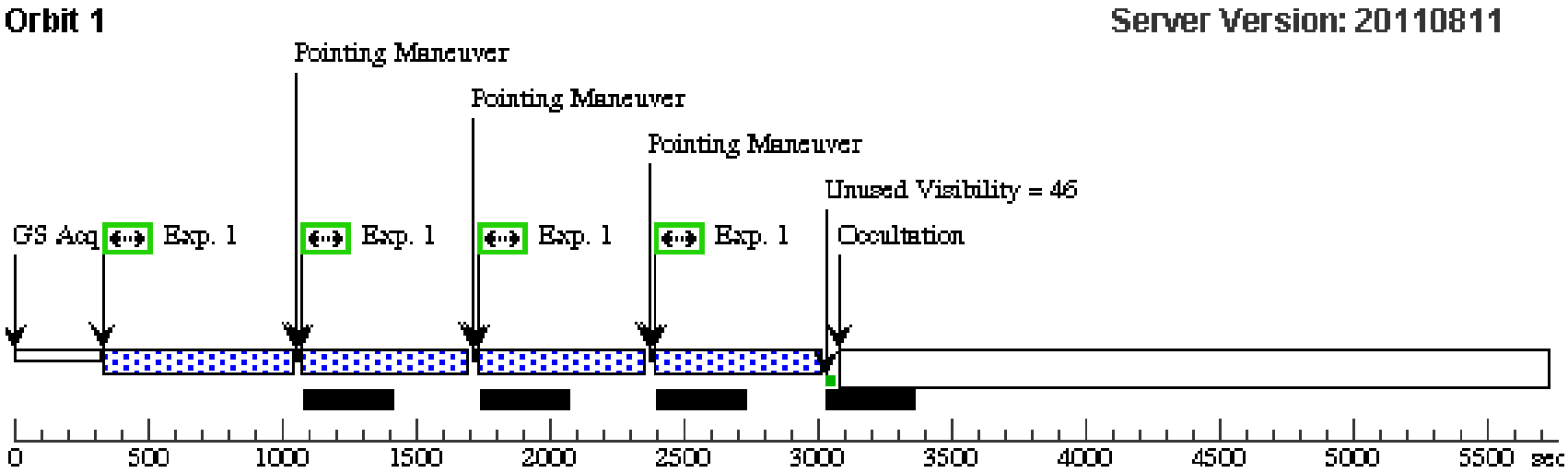
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-CM-TAU	RA: 05 34 31.9500 (83.6331250d) Dec: +22 00 52.10 (22.01447d) Equinox: J2000		V=16.5	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(1) V-CM-TAU	ACS/WFC, ACCUM, WFC1	F550M			Pattern 1, Exps 1-1 in Visit 03 (1)	500 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	*[1]*

Orbit Structure



Visit

Proposal 12748, Visit 04 Sat Oct 01 01:39:28 GMT 2011

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: SCHED 80%; BETWEEN 12-APR-2012:00:00:00 AND 23-APR-2012:00:00:00

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=3.5 Line Spacing=0.5	Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides=85.28 Center Pattern=false		(1)

Fixed Targets

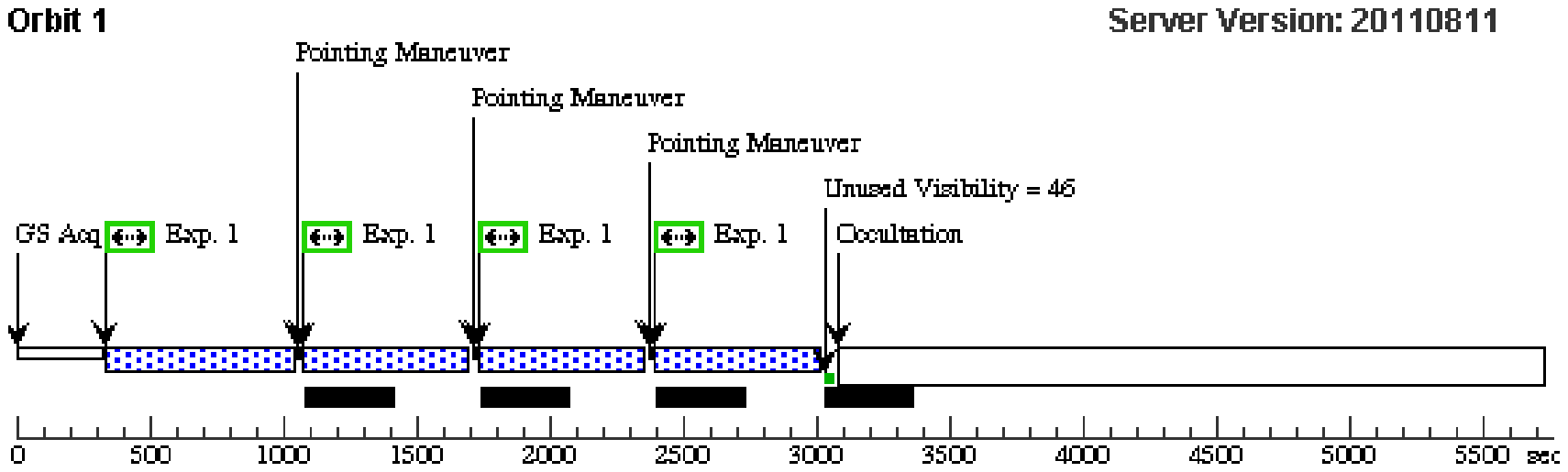
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-CM-TAU	RA: 05 34 31.9500 (83.6331250d) Dec: +22 00 52.10 (22.01447d) Equinox: J2000		V=16.5	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(1) V-CM-TAU	ACS/WFC, ACCUM, WFC1	F550M			Pattern 1, Exps 1-1 in Visit 04 (1)	500 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	*[1]*

Orbit Structure



Visit

Proposal 12748, Visit 05 Sat Oct 01 01:39:29 GMT 2011

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: SCHED 80%; BETWEEN 13-AUG-2012:00:00:00 AND 24-AUG-2012:00:00:00

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=3.5 Line Spacing=0.5	Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides=85.28 Center Pattern=false		(1)

Fixed Targets

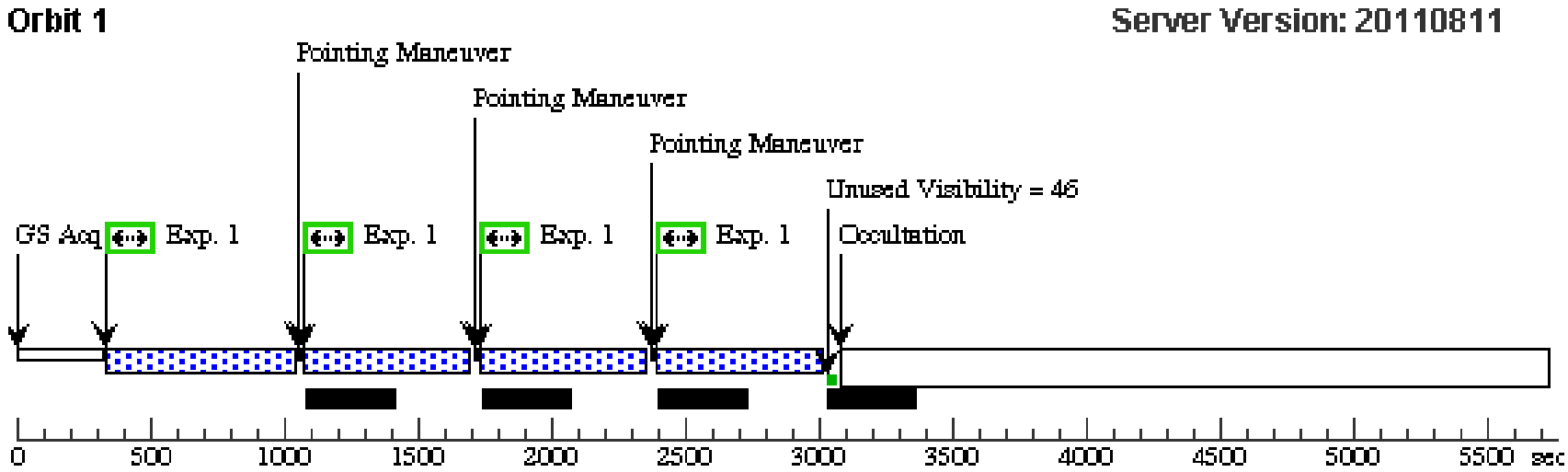
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-CM-TAU	RA: 05 34 31.9500 (83.6331250d) Dec: +22 00 52.10 (22.01447d) Equinox: J2000		V=16.5	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(1) V-CM-TAU	ACS/WFC, ACCUM, WFC1	F550M			Pattern 1, Exps 1-1 in Visit 05 (1)	500 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	*[1]*

Orbit Structure



Visit

Proposal 12748, Visit 06 Sat Oct 01 01:39:29 GMT 2011

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: SCHED 80%; BETWEEN 10-SEP-2012:00:00:00 AND 21-SEP-2012:00:00:00

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=3.5 Line Spacing=0.5	Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides=85.28 Center Pattern=false		(1)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-CM-TAU	RA: 05 34 31.9500 (83.6331250d) Dec: +22 00 52.10 (22.01447d) Equinox: J2000		V=16.5	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(1) V-CM-TAU	ACS/WFC, ACCUM, WFC1	F550M			Pattern 1, Exps 1-1 in Visit 06 (1)	500 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	*[1]*

Orbit Structure