12963 - Spatially Resolving the Disk Mass Accretion Process In Young Star Binaries

Cycle: 20, 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-GG-TAU	ACS/SBC	6	02-Jul-2012 21:40:26.0	yes
02	(2) V-UY-AUR	ACS/SBC	6	02-Jul-2012 21:40:55.0	yes

12 Total Orbits Used

ABSTRACT

We request HST ACS SBC images in the F140LP and F165LP filters in order to spatially resolve UV emission from H2 gas and scattered light emerging from structures in the planet-forming environments of two young binary systems: GG Tau A and UY Aur. These data, in conjunction with a suite of high-angular resolution ground-based observations -- including spectral images of near-IR H2 emission, mm observations of dust

continuum and CO gas emission through allocated ALMA "Cycle 0" observations -- will allow us to characterize the morphology of gas and dust passing between the circumbinary and circumstellar disks. Multi-wavelngth mapping of the distribution of material in GG Tau and UY Aur will reveal the role tidal truncation plays in the formation of planets in binary systems and help to constrain a growing number of hydrodynamic simulations of the complex disk-disk interactions.

OBSERVING DESCRIPTION

The observations for this program are straight-forward ACS SBC imaging using the F165LP and F140LP filters. There will be three orbits per filter for each of the two targets in this program. Each orbit will consist of four exposures in an ACS SBC 4pt box dither pattern with total offsets of < 7". There will be a "pos_targ" offset between each orbit so that the dither patterns do not place the stars in the same region of the detector in different exposures. There will be a total of 12 exposures per filter for each of the two targets, for a total of 24 images per source. Hence, there will be a total of 48 images acquired for this program in the allotted 12 orbits.

The Phase II observations are set up as:
Visit 1:
On GG Tau, first 3 orbits execute three 4 point dither patterns in the F140LP filter. Orbits 4-6 execute three 4 point dither patterns in the F165LP filters. Exposure times are on the order of 600-645s per exposure.
Visit 2:
On UY Aur, orbits 7-9 execute three 4 point dither patterns in the F140LP filter. Orbits 10-12 execute three 4 point dither patterns in the F165LP filters. Exposure times are on the order of 600-645s per exposure.

NOTE On Bright Object Flags:
For UY Aur, the Bright Object Tool came back with a report that UY Aur is an 05V star that may exceed the health of the SBC MAMA detector! This is totally false. UY Aur is a 12th magnitude late K/early M star. There are no O5 stars within the Taurus/Aurigae star formation complex. The health/safety limits on the SBC MAMA detector should not be exceeded with these observations.

Visit

Proposal 12963, Visit 1: GG Tau ACS SBC Imaging (01) Tue Jul 03 01:41:06 GMT 2012

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/SBC

Special Requirements: SCHED 100%

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-SBC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=1.79 Line Spacing=1.16	Coordinate Frame=POS-TARG Pattern Orientation=20.02 Angle Between Sides=63.65 Center Pattern=false		(1), (4)
(2)	Pattern Type=ACS-SBC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=1.969 Line Spacing=1.276	Coordinate Frame=POS-TARG Pattern Orientation=20.02 Angle Between Sides=63.65 Center Pattern=false		(2), (5)
(3)	Pattern Type=ACS-SBC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=1.79 Line Spacing=1.16	Coordinate Frame=POS-TARG Pattern Orientation=20.02 Angle Between Sides=63.65 Center Pattern=false		(3), (6)

Fixed Targets

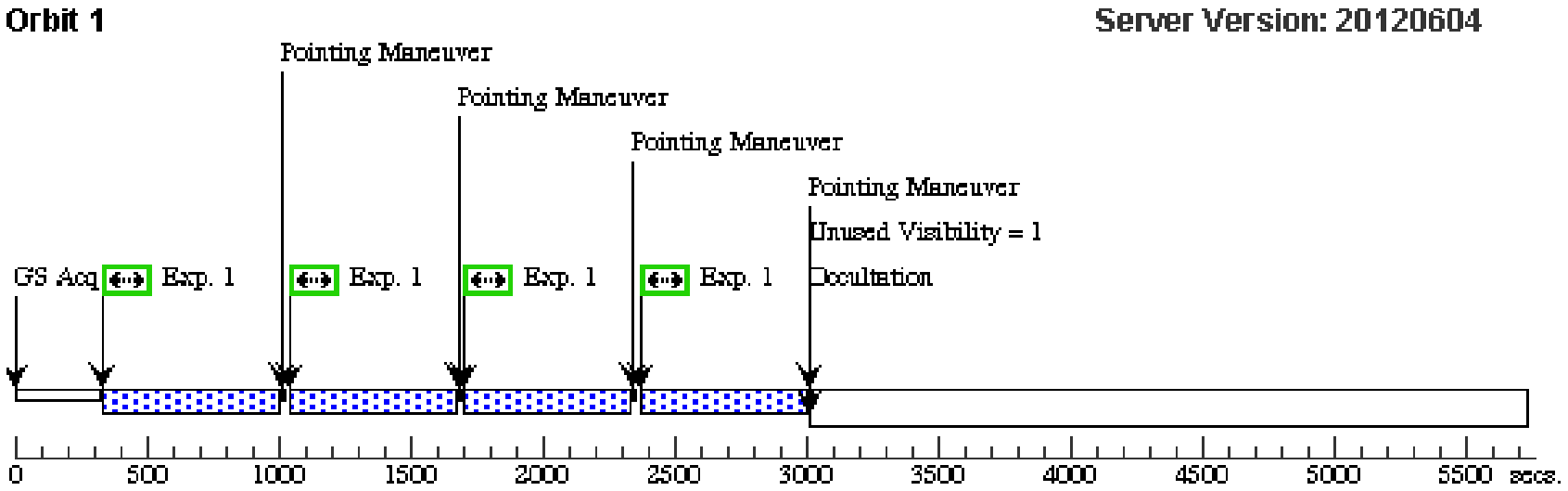
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-GG-TAU	RA: 04 32 30.3460 (68.1264417d) Dec: +17 31 40.64 (17.52796d) Equinox: J2000		V=12.34 0.6 cts/s in ACS SBC F165LP (estimated)	Reference Frame: ICRS

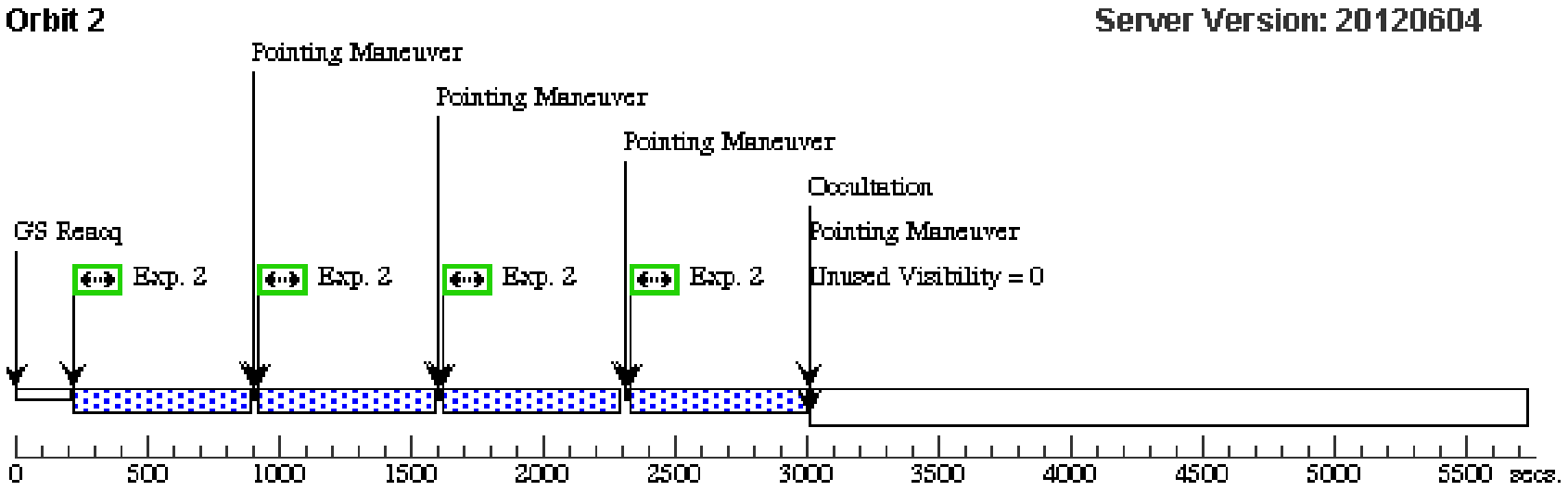
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	(371397)	(1) V-GG-TAU	ACS/SBC, ACCUM, SBC	F140LP			Pattern 1, Exps 1-1 in Visit 1: GG Tau ACS SBC Imaging (01) (1)	604 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
2	(371397)	(1) V-GG-TAU	ACS/SBC, ACCUM, SBC	F140LP		POS TARG 2,2	Pattern 2, Exps 2-2 in Visit 1: GG Tau ACS SBC Imaging (01) (2)	642 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[2]***
3	(371397)	(1) V-GG-TAU	ACS/SBC, ACCUM, SBC	F140LP		POS TARG -2,-2	Pattern 3, Exps 3-3 in Visit 1: GG Tau ACS SBC Imaging (01) (3)	642 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[3]***
4	(371397)	(1) V-GG-TAU	ACS/SBC, ACCUM, SBC	F165LP			Pattern 1, Exps 4-4 in Visit 1: GG Tau ACS SBC Imaging (01) (1)	635 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[4]***
5	(371397)	(1) V-GG-TAU	ACS/SBC, ACCUM, SBC	F165LP		POS TARG 2,2	Pattern 2, Exps 5-5 in Visit 1: GG Tau ACS SBC Imaging (01) (2)	642 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[5]***
6	(371397)	(1) V-GG-TAU	ACS/SBC, ACCUM, SBC	F165LP		POS TARG -2,-2	Pattern 3, Exps 6-6 in Visit 1: GG Tau ACS SBC Imaging (01) (3)	642 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[6]***

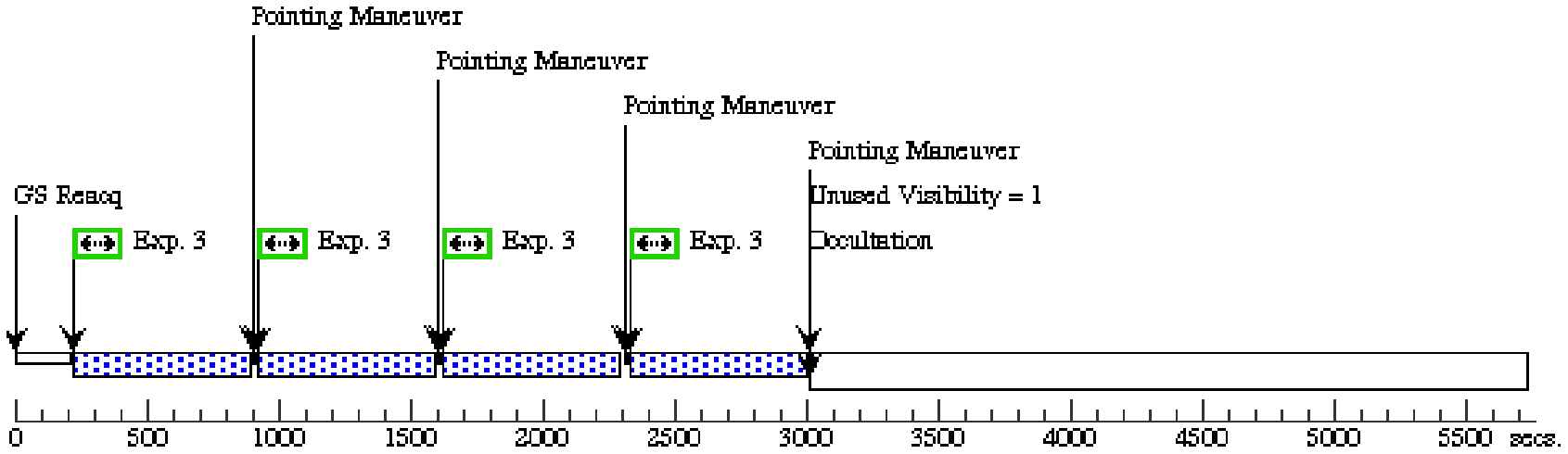
Orbit Structure





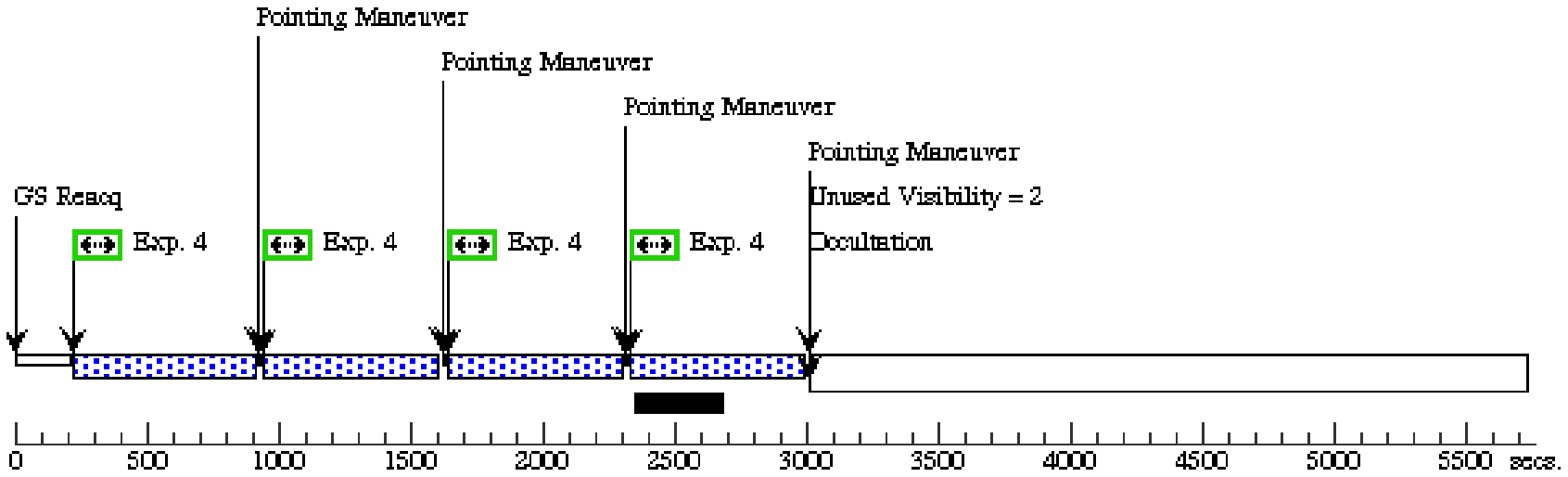
Orbit 3

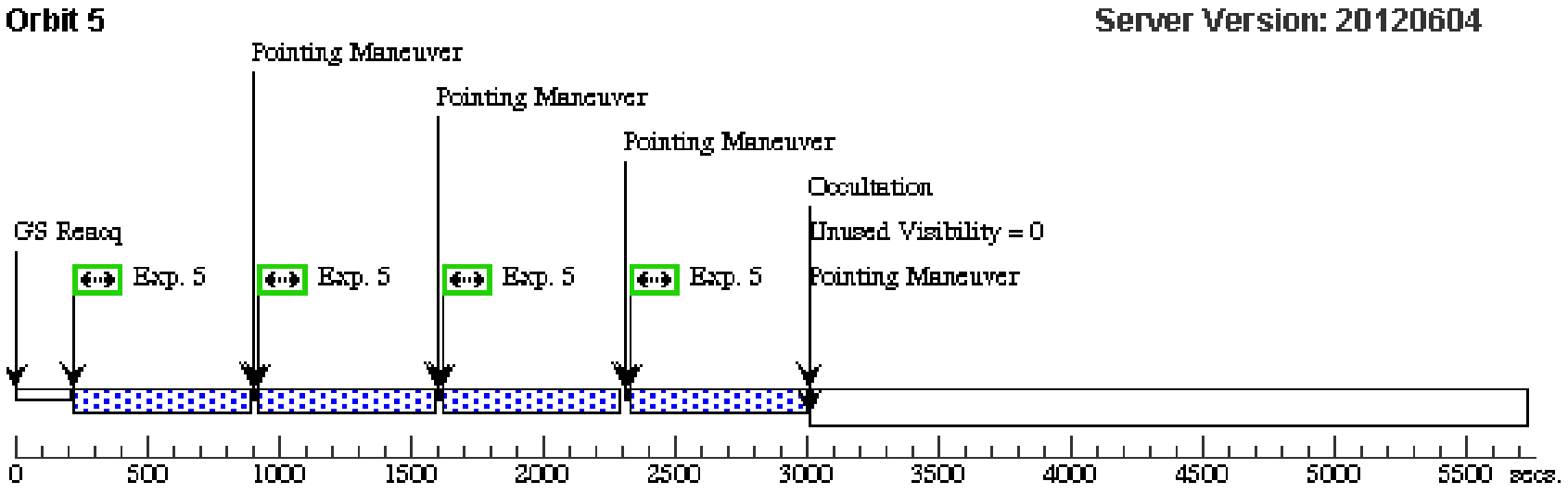
Server Version: 20120604



Orbit 4

Server Version: 20120604

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Pointing Maneuver
Pointing Maneuver
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GS Reacq
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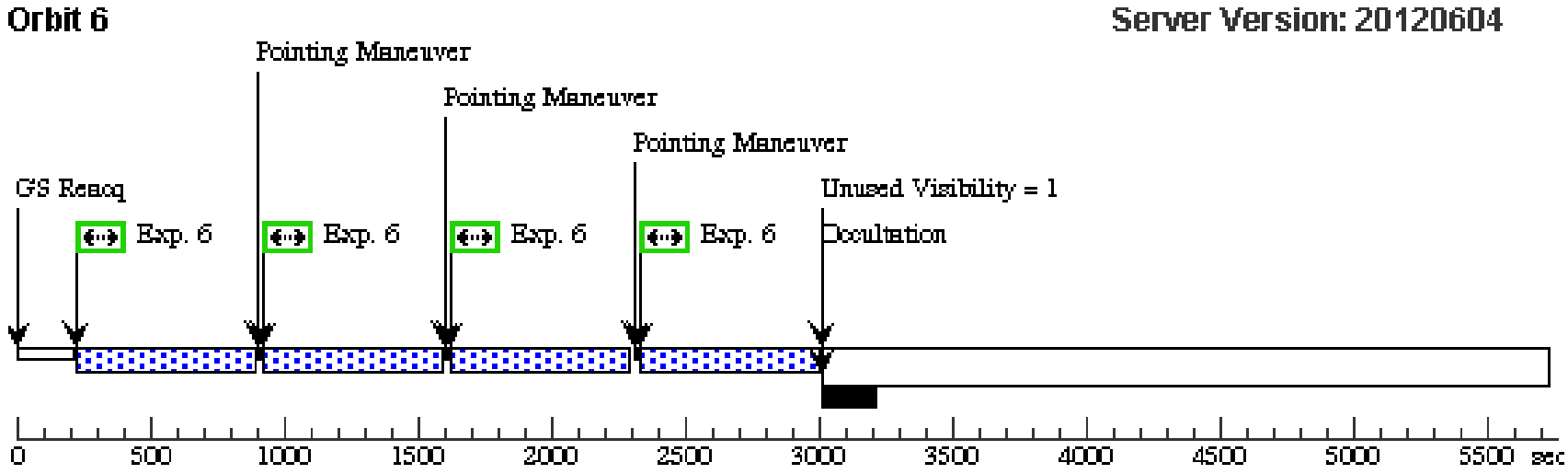
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Exp. 6
Exp. 6
Exp. 6
Occultation
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1000
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3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 12963, Visit 2: UY Aur ACS SBC Imaging (02) Tue Jul 03 01:41:14 GMT 2012

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/SBC

Special Requirements: SCHED 100%

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-SBC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=1.79 Line Spacing=1.16	Coordinate Frame=POS-TARG Pattern Orientation=20.02 Angle Between Sides=63.65 Center Pattern=false		(1), (4)
(2)	Pattern Type=ACS-SBC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=1.969 Line Spacing=1.276	Coordinate Frame=POS-TARG Pattern Orientation=20.02 Angle Between Sides=63.65 Center Pattern=false		(2), (5)
(3)	Pattern Type=ACS-SBC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=1.79 Line Spacing=1.16	Coordinate Frame=POS-TARG Pattern Orientation=20.02 Angle Between Sides=63.65 Center Pattern=false		(3), (6)

Fixed Targets

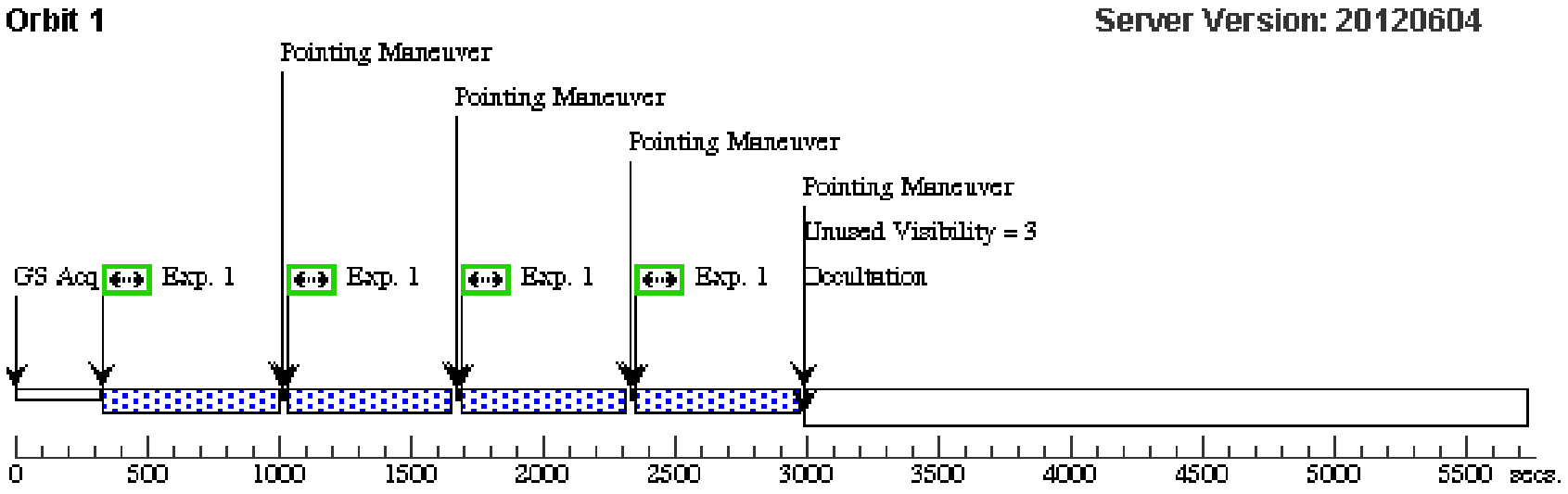
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	V-UY-AUR	RA: 04 51 47.3750 (72.9473958d) Dec: +30 47 13.46 (30.78707d) Equinox: J2000		V=12.9 0.4 cts/s in ACS SBC F165LP (estimated)	Reference Frame: ICRS

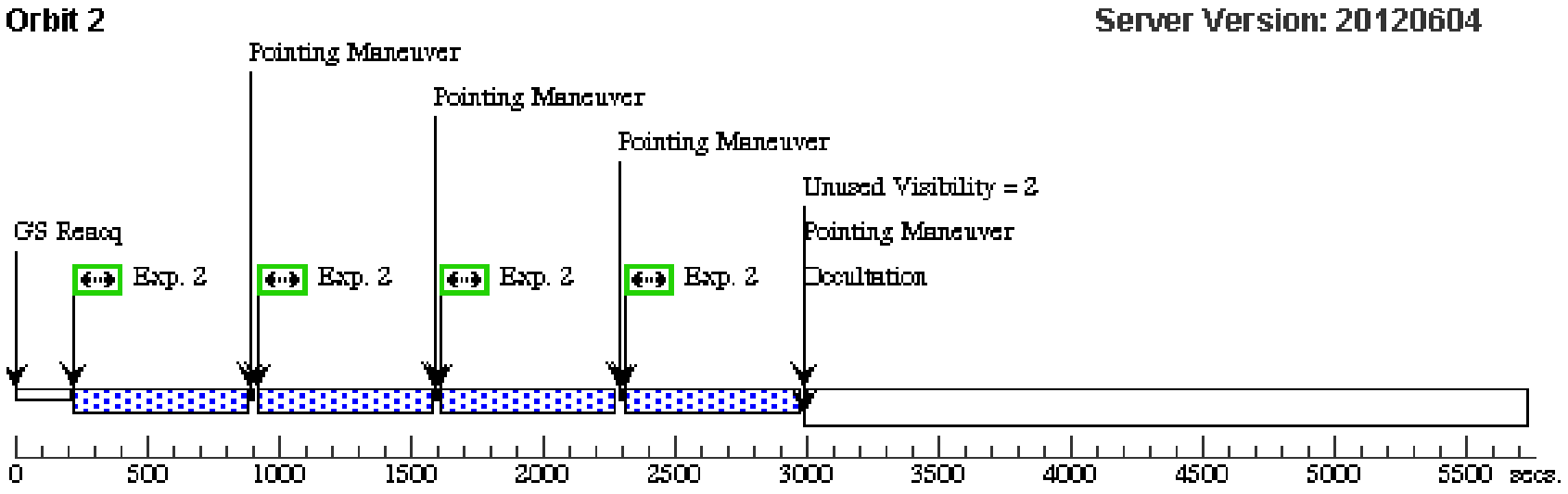
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	(371417)	(2) V-UY-AUR	ACS/SBC, ACCUM, SBC	F140LP			Pattern 1, Exps 1-1 in Visit 2: UY Aur ACS SBC Imaging (02) (1)	599 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
2	(371417)	(2) V-UY-AUR	ACS/SBC, ACCUM, SBC	F140LP		POS TARG 2,2	Pattern 2, Exps 2-2 in Visit 2: UY Aur ACS SBC Imaging (02) (2)	637 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[2]***
3	(371417)	(2) V-UY-AUR	ACS/SBC, ACCUM, SBC	F140LP		POS TARG -2,-2	Pattern 3, Exps 3-3 in Visit 2: UY Aur ACS SBC Imaging (02) (3)	637 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[3]***
4	(371484)	(2) V-UY-AUR	ACS/SBC, ACCUM, SBC	F165LP			Pattern 1, Exps 4-4 in Visit 2: UY Aur ACS SBC Imaging (02) (1)	631 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[4]***
5	(371484)	(2) V-UY-AUR	ACS/SBC, ACCUM, SBC	F165LP		POS TARG 2,2	Pattern 2, Exps 5-5 in Visit 2: UY Aur ACS SBC Imaging (02) (2)	637 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[5]***
6	(371484)	(2) V-UY-AUR	ACS/SBC, ACCUM, SBC	F165LP		POS TARG -2,-2	Pattern 3, Exps 6-6 in Visit 2: UY Aur ACS SBC Imaging (02) (3)	637 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[6]***

Orbit Structure





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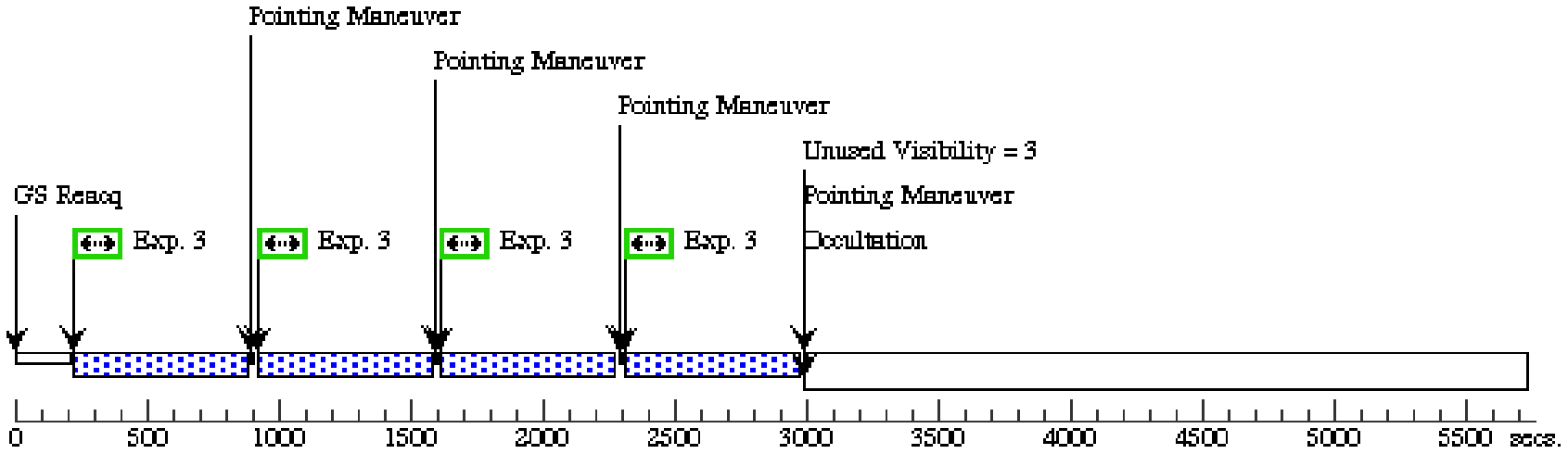

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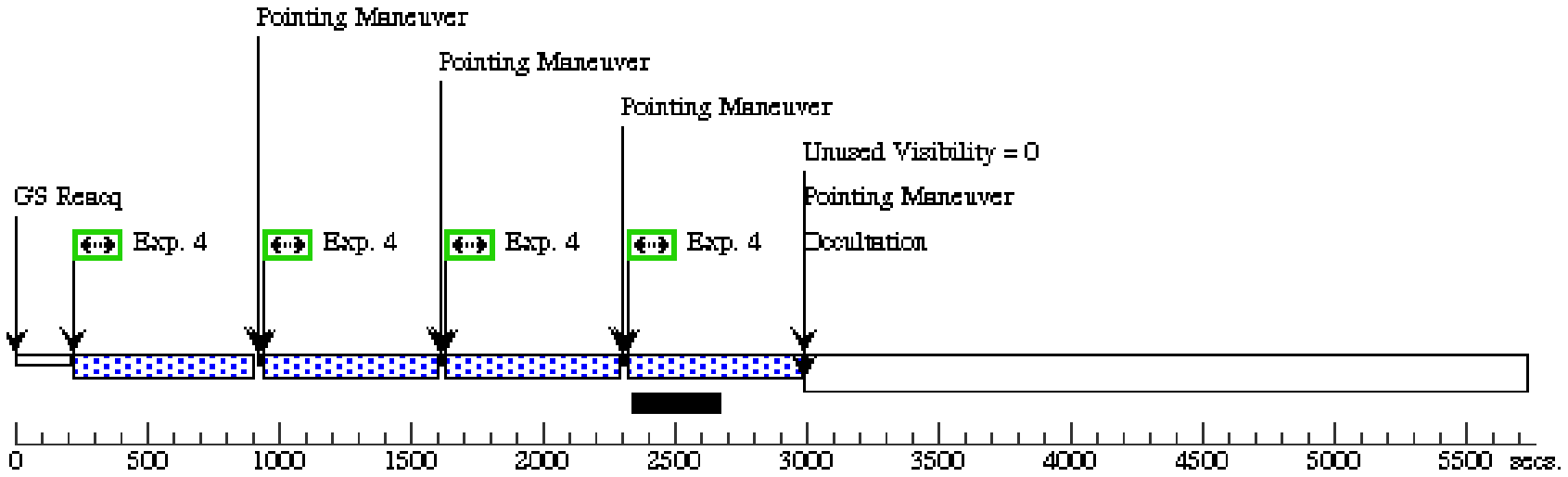

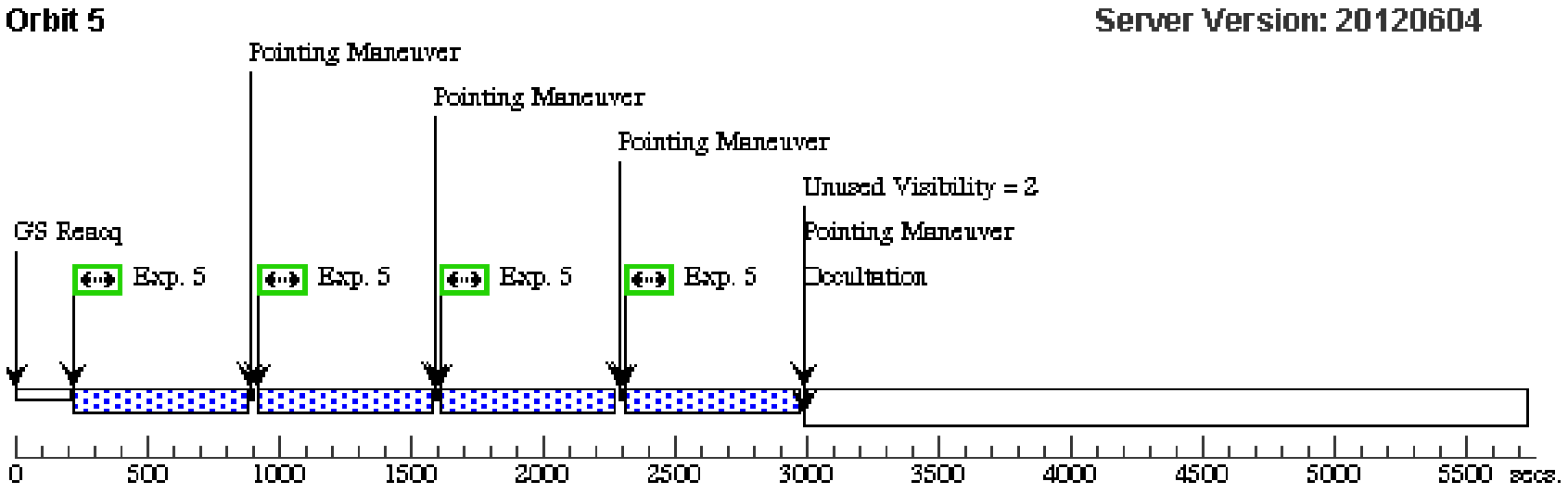
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Pointing Maneuver
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Exp. 5
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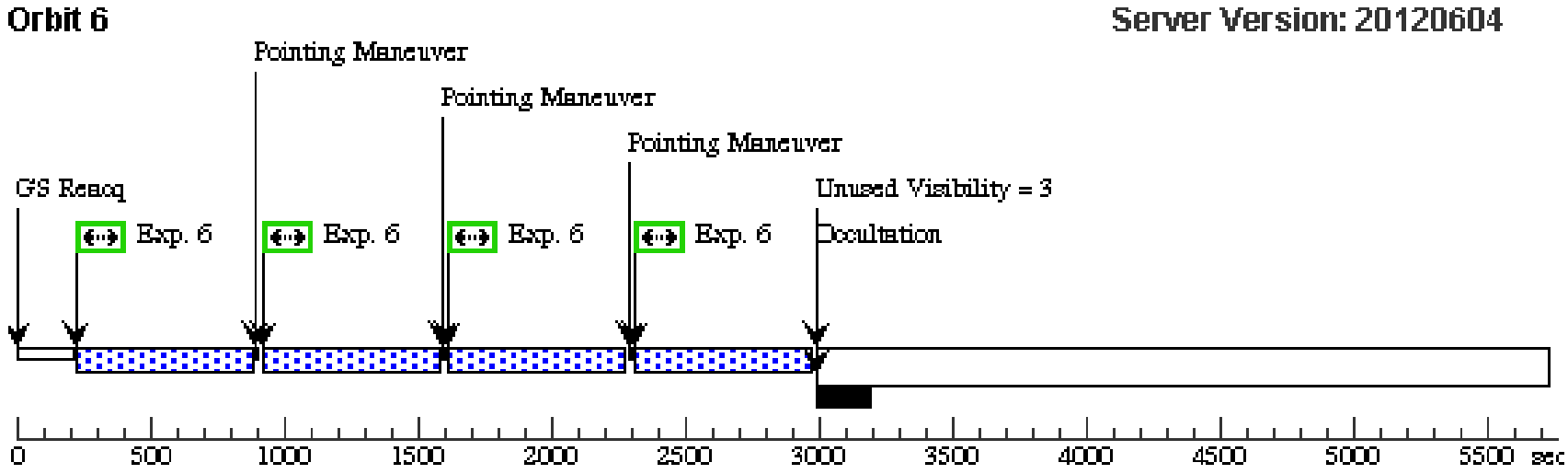
secs.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