



12573 - STIS Coronagraphy of New Debris Disks from the WISE All-Sky Survey

Cycle: 19, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

<i>Name</i>	<i>Institution</i>	<i>E-Mail</i>
Dr. Deborah Padgett (PI) (Contact)	NASA Goddard Space Flight Center	deborah.l.padgett@nasa.gov
Mr. John Krist (CoI) (Contact)	Jet Propulsion Laboratory	john.e.krist@jpl.nasa.gov
Dr. Karl Stapelfeldt (CoI)	NASA Goddard Space Flight Center	karl.r.stapelfeldt@nasa.gov
Dr. Wilson Liu (CoI)	California Institute of Technology	wliu@ipac.caltech.edu
Dr. David Leisawitz (CoI)	NASA Goddard Space Flight Center	david.t.leisawitz@nasa.gov
Dr. Sergio Fajardo-Acosta (CoI)	California Institute of Technology	fajardo@ipac.caltech.edu
Dr. John Henry Debes (CoI)	Space Telescope Science Institute	debes@stsci.edu

VISITS

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
01	(1) HD-157587	STIS/CCD	1	11-Sep-2012 21:01:09.0	yes
02	(1) HD-157587	STIS/CCD	1	11-Sep-2012 21:01:17.0	yes
03	(2) HD-183970	STIS/CCD	1	11-Sep-2012 21:01:24.0	yes
04	(2) HD-183970	STIS/CCD	1	11-Sep-2012 21:01:33.0	yes
05	(3) HD-23208	STIS/CCD	1	11-Sep-2012 21:01:39.0	yes
06	(3) HD-23208	STIS/CCD	1	11-Sep-2012 21:01:44.0	yes
09	(5) HD-28069	STIS/CCD	1	11-Sep-2012 21:01:52.0	yes
10	(5) HD-28069	STIS/CCD	1	11-Sep-2012 21:02:01.0	yes
13	(7) HD-55918	STIS/CCD	1	11-Sep-2012 21:02:08.0	yes

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
14	(7) HD-55918	STIS/CCD	1	11-Sep-2012 21:02:14.0	yes
15	(8) HD-24649	STIS/CCD	1	11-Sep-2012 21:02:21.0	yes
16	(8) HD-24649	STIS/CCD	1	11-Sep-2012 21:02:30.0	yes

12 Total Orbits Used

ABSTRACT

Debris disks trace the collisional breakdown of asteroid and comet parent bodies orbiting nearby main sequence stars. While present in ~15% of FGK stars - as diagnosed by infrared excess measurement by IRAS, ISO, and Spitzer - only 6 debris disks have been detected in scattered light around late-type stars. The detectability of debris disks in scattered light trends strongly with the magnitude of their infrared excess, so progress in this field depends on identifying new stars with strong excess. The Wide-Field Infrared Survey Explorer (WISE) has just completed new, sensitive all-sky mapping in the 3.3, 4.6, 12, and 22 micron bands. Association of the WISE sources to Hipparcos stars has led to the identification of 320 nearby main sequence stars with robustly detected warm 22 micron excesses not previously known. We propose STIS coronagraphic imaging of the six brightest and nearest debris disks that WISE has found in association with solar-type stars; all six have excesses stronger than the successfully imaged disk of HD 107146. Our goal is to obtain the first resolved images of these disks at ~5 AU resolution, define the disk sizes and orientations, and uncover disk substructures indicative of planetary perturbations. The results should double the number of debris disks imaged around late-type stars, opening a wider window into the structure of planetary systems.

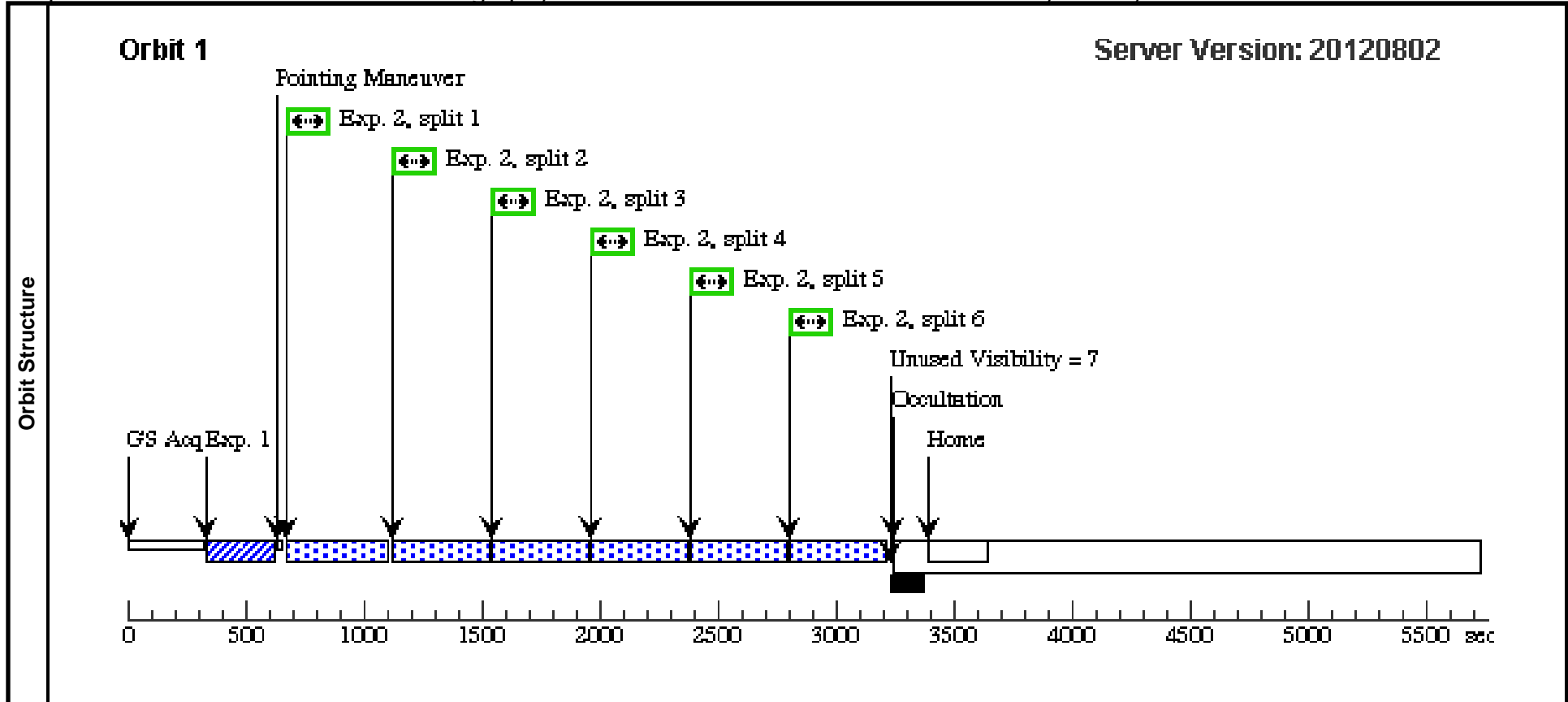
OBSERVING DESCRIPTION

We are using the STIS coronagraph to image circumstellar debris disks around 6 stars with WISE-detected excesses. Each target is observed in two back-to-back orbits, with the two orbits separated by ~30 deg in telescope roll. The two rolls allow separation of the disk and instrumental components of the image using an iterative algorithm. At the beginning of each orbit the usual STIS coronagraph acquisition is done. Then, a ~2000 sec exposure (split into multiple shorter CR-splits) is taken with the star located behind the coronagraphic wedge at WEDGEA1.0. Each orbit uses the same image sequence. Exposure times and CR-splits are chosen to minimize, but not completely prevent, saturation.

Proposal 12573 - Visit 01 - STIS Coronagraphy of New Debris Disks from the WISE All-Sky Survey

Wed Sep 12 01:02:39 GMT 2012

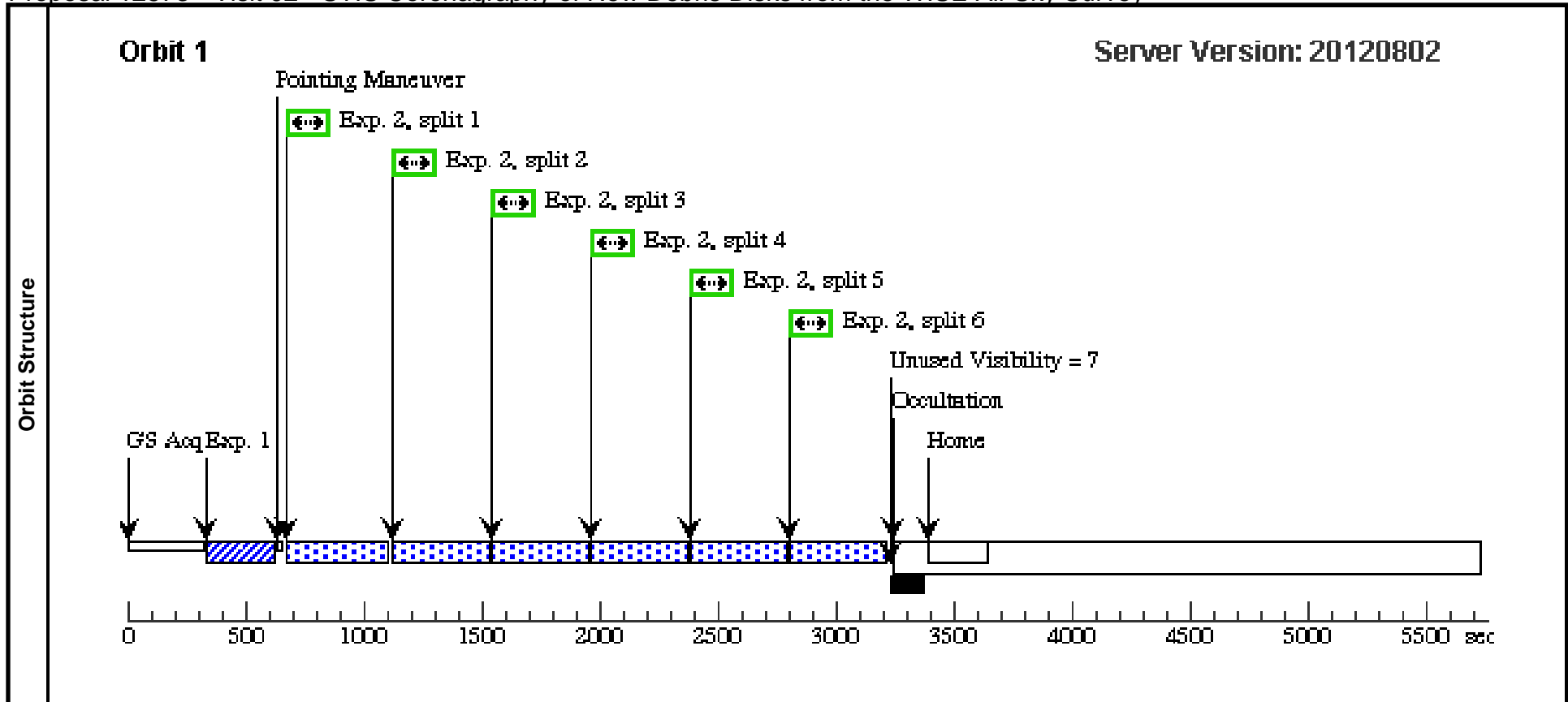
Visit	Proposal 12573, Visit 01, completed Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD Special Requirements: (none)									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(1)	HD-157587	RA: 17 24 52.2385 (261.2176604d) Dec: -18 51 33.19 (-18.85922d) Equinox: J2000	Proper Motion RA: -4.09 mas/yr Proper Motion Dec: -33.03 mas/yr Epoch of Position: 1991.25	V=8.48	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(1) HD-157587	(1) HD-157587	STIS/CCD, ACQ, F25ND3	MIRROR					0.5 Secs [==>]
2	(1) HD-157587	(1) HD-157587	(1) HD-157587	STIS/CCD, ACCUM, WEDGEA1.0	MIRROR	CR-SPLIT=6; GAIN=4			2268 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)] [==>(Split 5)] [==>(Split 6)]	[1]



Proposal 12573 - Visit 02 - STIS Coronagraphy of New Debris Disks from the WISE All-Sky Survey

Wed Sep 12 01:02:41 GMT 2012

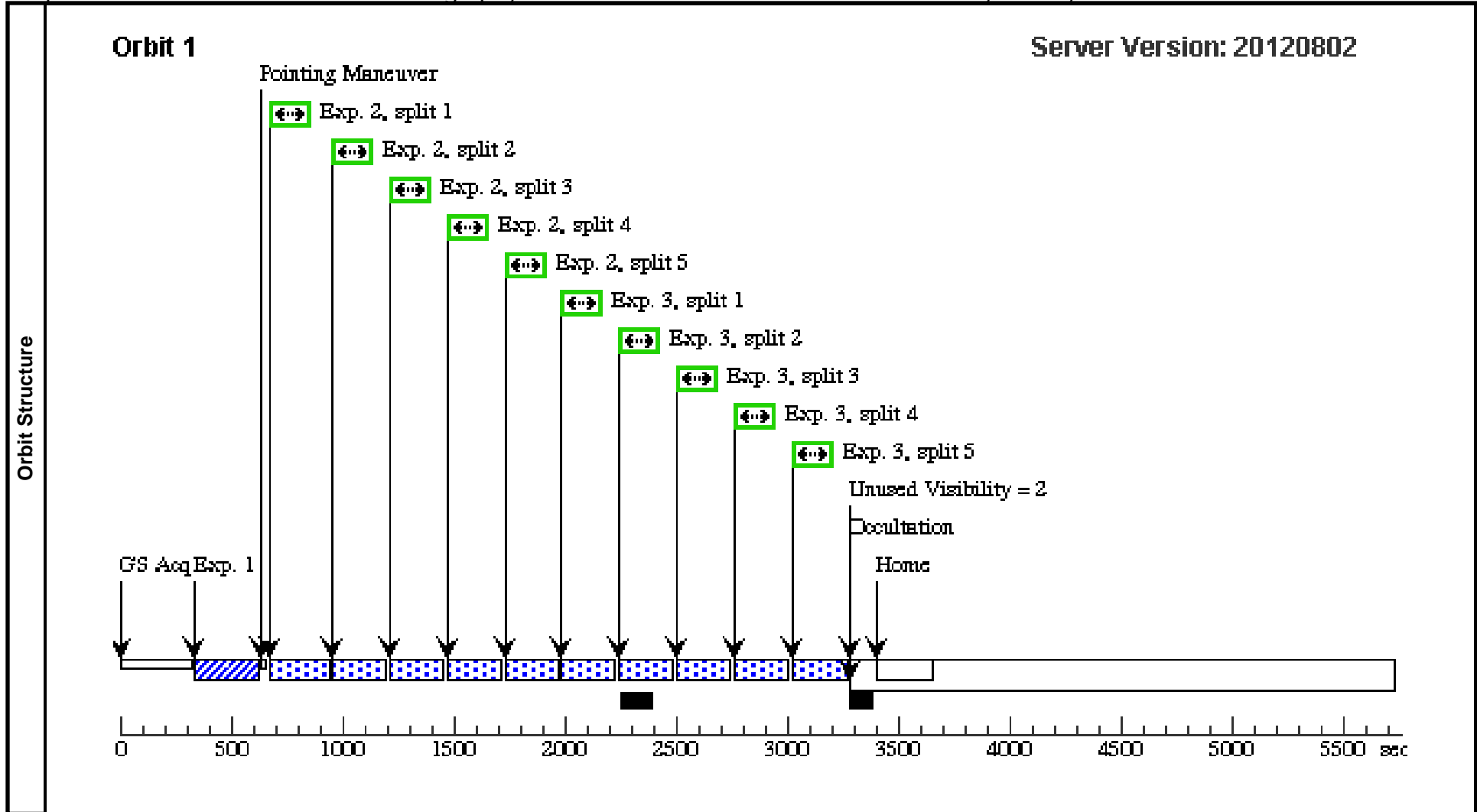
Visit	Proposal 12573, Visit 02, completed Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD Special Requirements: ORIENT 30D TO 40D FROM 01; AFTER 01 BY 0.8 Orbits TO 1.2 Orbits									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(1)	HD-157587	RA: 17 24 52.2385 (261.2176604d) Dec: -18 51 33.19 (-18.85922d) Equinox: J2000	Proper Motion RA: -4.09 mas/yr Proper Motion Dec: -33.03 mas/yr Epoch of Position: 1991.25	V=8.48	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(1) HD-157587	(1) HD-157587	STIS/CCD, ACQ, F25ND3	MIRROR				0.5 Secs [==>]	[1]
2	(1) HD-157587	(1) HD-157587	(1) HD-157587	STIS/CCD, ACCUM, WEDGEA1.0	MIRROR	CR-SPLIT=6; GAIN=4			2268 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)] [==>(Split 5)] [==>(Split 6)]	[1]



Proposal 12573 - Visit 03 - STIS Coronagraphy of New Debris Disks from the WISE All-Sky Survey

Wed Sep 12 01:02:42 GMT 2012

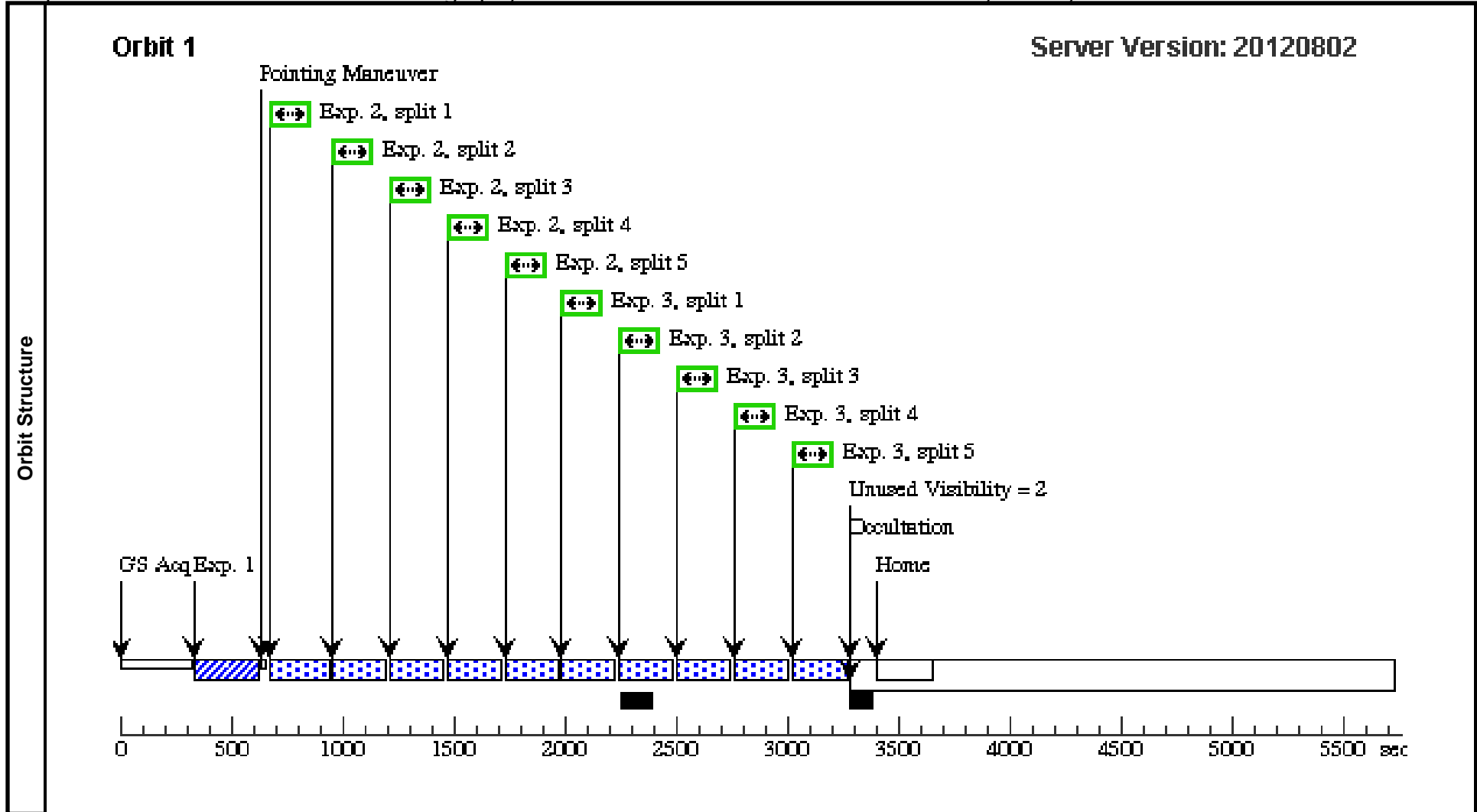
Visit	Proposal 12573, Visit 03, scheduling Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD Special Requirements: (none)									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(2)	HD-183970	RA: 19 30 40.0129 (292.6667204d) Dec: +35 06 9.19 (35.10255d) Equinox: J2000	Proper Motion RA: 48.45 mas/yr Proper Motion Dec: 71.17 mas/yr Epoch of Position: 1991.25	V=7.83	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(2) HD-183970	STIS/CCD, ACQ, F25ND3	MIRROR					0.5 Secs [==>]	[1]
2	(2) HD-183970	STIS/CCD, ACCUM, WEDGEA1.0	MIRROR	CR-SPLIT=5; GAIN=4				1070 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)] [==>(Split 5)]	[1]	
3	(2) HD-183970	STIS/CCD, ACCUM, WEDGEA1.0	MIRROR	CR-SPLIT=5; GAIN=4				1070 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)] [==>(Split 5)]	[1]	



Proposal 12573 - Visit 04 - STIS Coronagraphy of New Debris Disks from the WISE All-Sky Survey

Wed Sep 12 01:02:45 GMT 2012

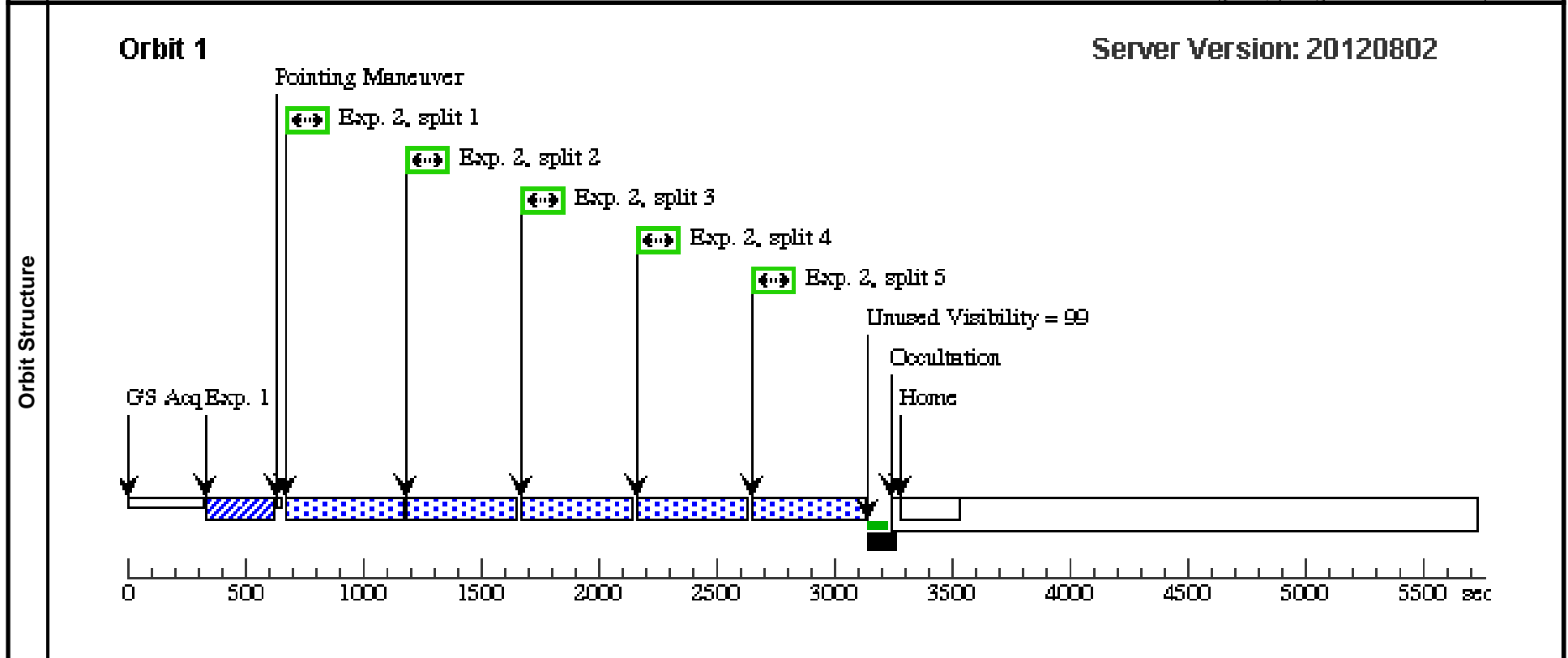
Visit	Proposal 12573, Visit 04, scheduling Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD Special Requirements: ORIENT 30D TO 40D FROM 03; AFTER 03 BY 0.8 Orbits TO 1.2 Orbits									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(2)	HD-183970	RA: 19 30 40.0129 (292.6667204d) Dec: +35 06 9.19 (35.10255d) Equinox: J2000	Proper Motion RA: 48.45 mas/yr Proper Motion Dec: 71.17 mas/yr Epoch of Position: 1991.25	V=7.83	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(2) HD-183970	STIS/CCD, ACQ, F25ND3	MIRROR					0.5 Secs [==>]	[1]
	2	(2) HD-183970	STIS/CCD, ACCUM, WEDGEA1.0	MIRROR	CR-SPLIT=5; GAIN=4				1070 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)] [==>(Split 5)]	[1]
	3	(2) HD-183970	STIS/CCD, ACCUM, WEDGEA1.0	MIRROR	CR-SPLIT=5; GAIN=4				1070 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)] [==>(Split 5)]	[1]



Visit	Proposal 12573, Visit 05, completed				
	Diagnostic Status: No Diagnostics				
	Scientific Instruments: STIS/CCD				
	Special Requirements: (none)				

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(3)	HD-23208	RA: 03 42 39.8039 (55.6658496d) Dec: -20 32 43.64 (-20.54546d) Equinox: J2000	Proper Motion RA: 1.52 mas/yr Proper Motion Dec: 22.93 mas/yr Epoch of Position: 1991.25	V=9.16	Reference Frame: ICRS

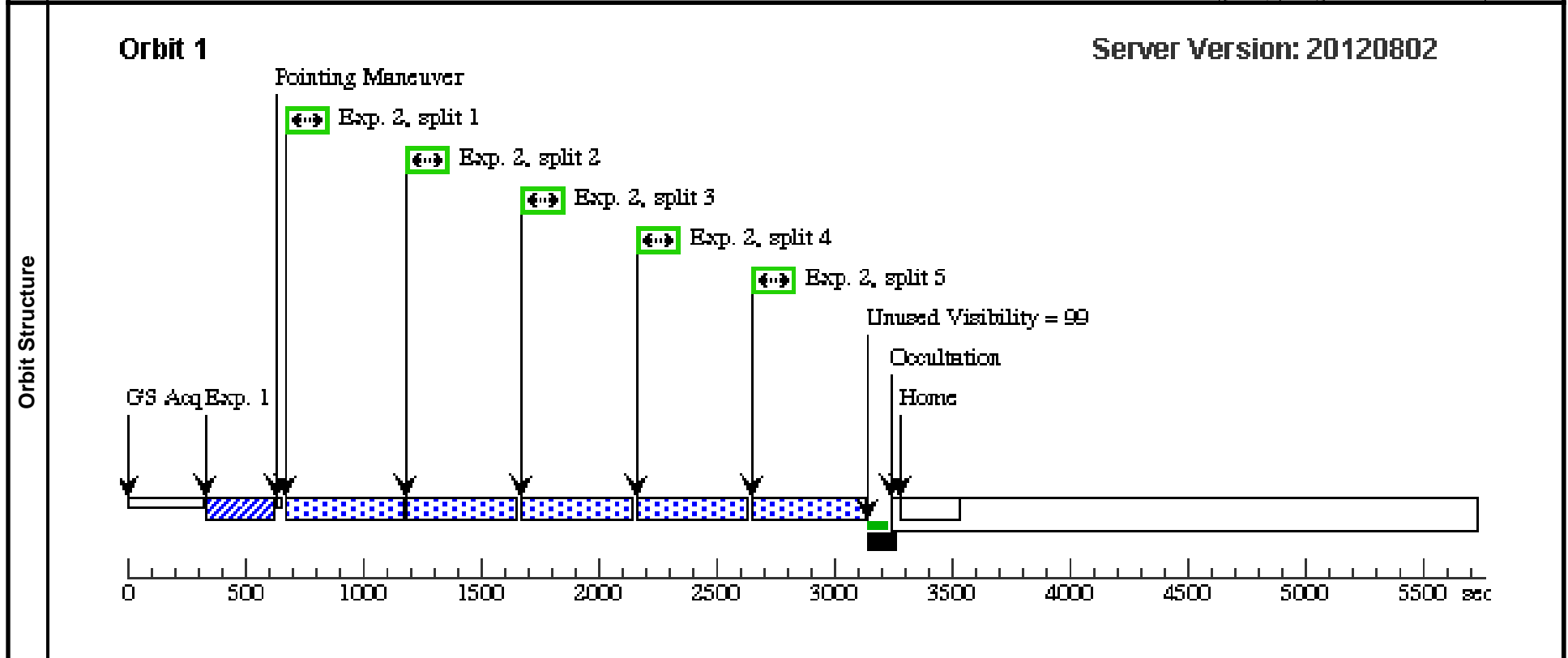
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(3) HD-23208	STIS/CCD, ACQ, F25ND3	MIRROR				0.5 Secs [==>]	[1]
	2		(3) HD-23208	STIS/CCD, ACCUM, WEDGEA1.0	MIRROR	CR-SPLIT=5; GAIN=4			2219 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)] [==>(Split 5)]	[1]



Visit	Proposal 12573, Visit 06, completed				
	Diagnostic Status: No Diagnostics				
	Scientific Instruments: STIS/CCD				
	Special Requirements: ORIENT 30D TO 40D FROM 05: AFTER 05 BY 0.8 Orbits TO 1.2 Orbits				

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(3)	HD-23208	RA: 03 42 39.8039 (55.6658496d) Dec: -20 32 43.64 (-20.54546d) Equinox: J2000	Proper Motion RA: 1.52 mas/yr Proper Motion Dec: 22.93 mas/yr Epoch of Position: 1991.25	V=9.16	Reference Frame: ICRS

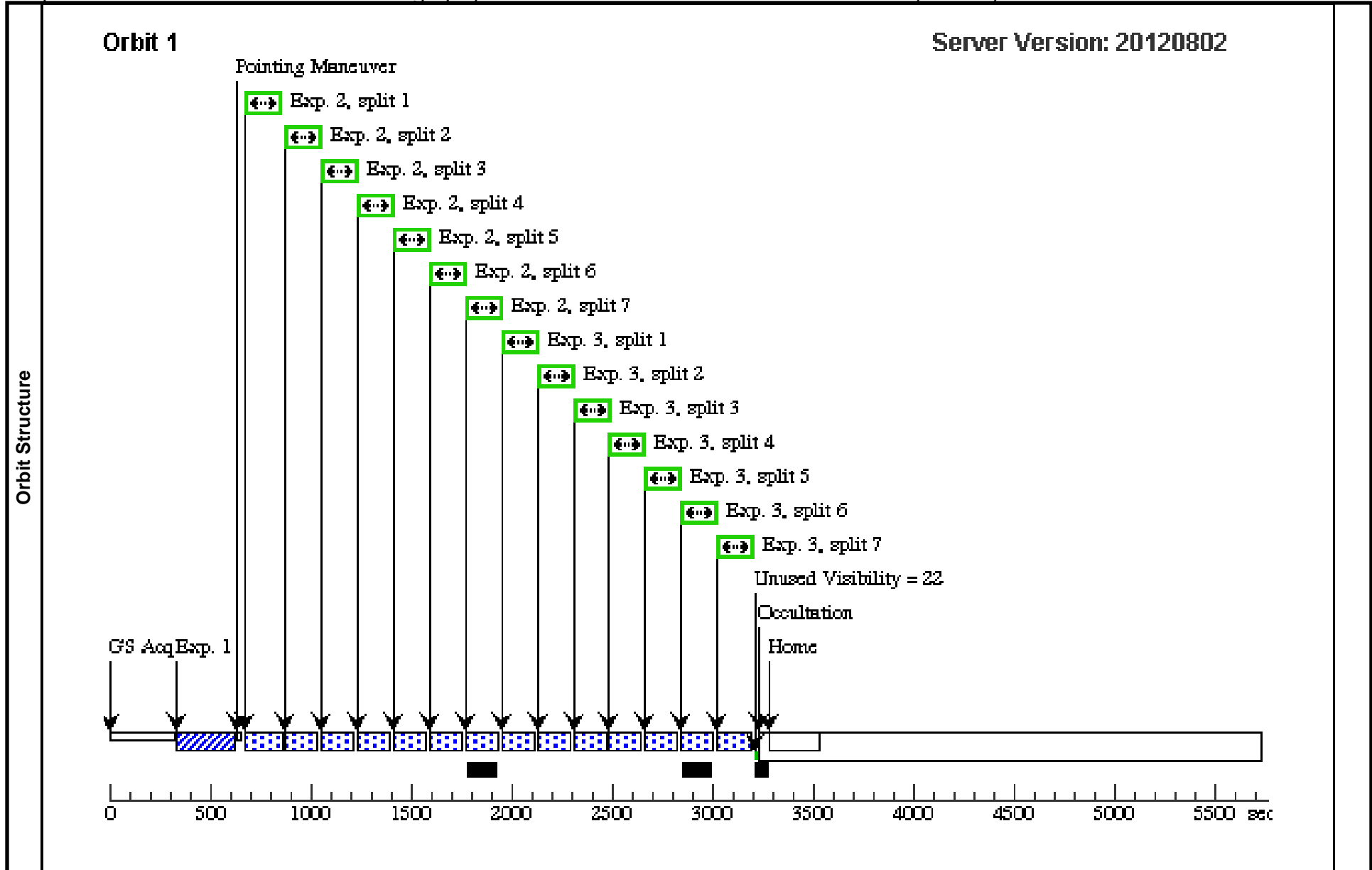
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(3) HD-23208	STIS/CCD, ACQ, F25ND3	MIRROR				0.5 Secs [==>]	[1]
	2		(3) HD-23208	STIS/CCD, ACCUM, WEDGEA1.0	MIRROR	CR-SPLIT=5; GAIN=4			2219 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)] [==>(Split 5)]	[1]



Proposal 12573 - Visit 09 - STIS Coronagraphy of New Debris Disks from the WISE All-Sky Survey

Wed Sep 12 01:02:48 GMT 2012

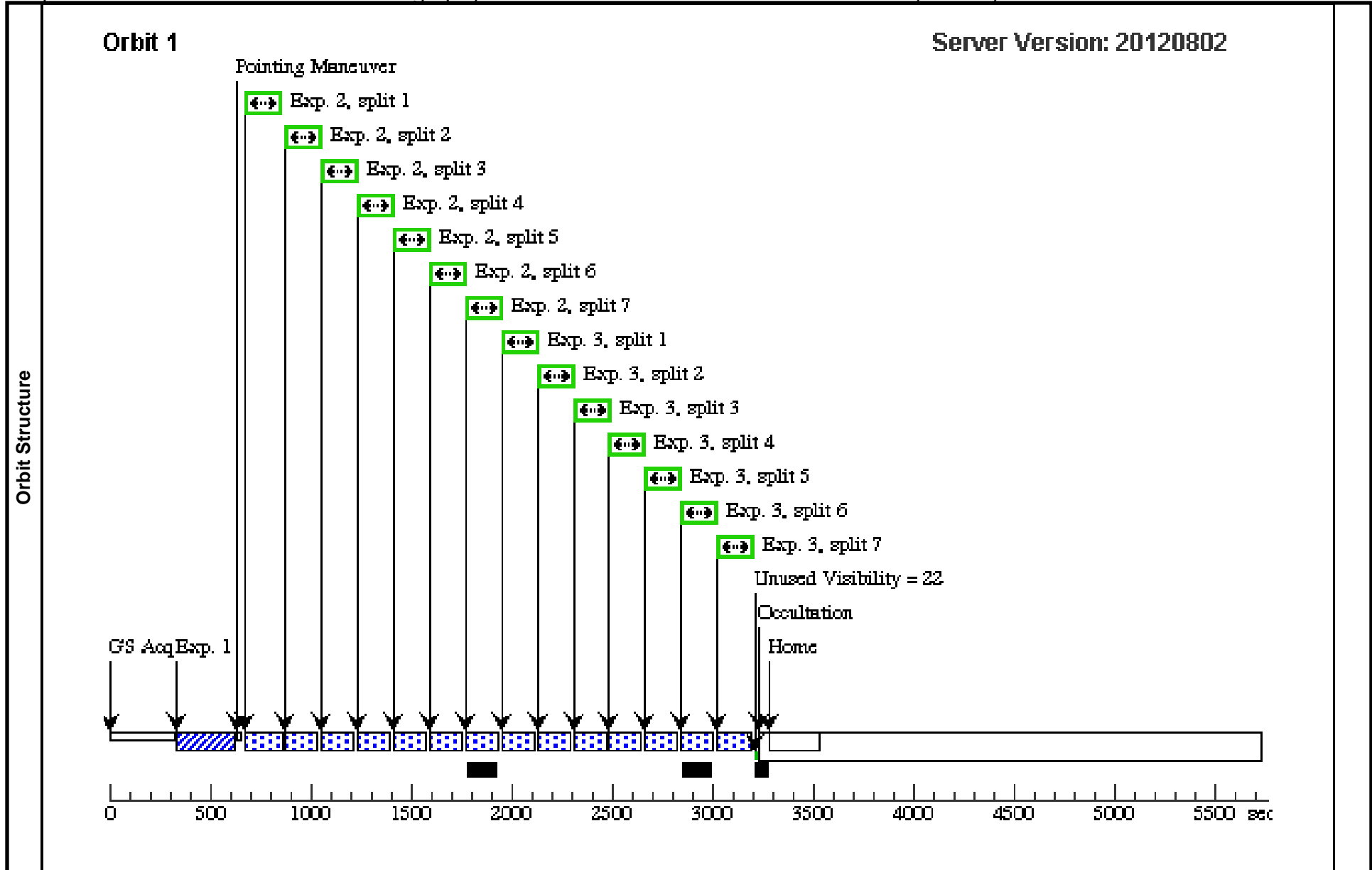
Visit	Proposal 12573, Visit 09, scheduling Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD Special Requirements: (none)									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(5)	HD-28069	RA: 04 25 57.3388 (66.4889117d) Dec: +05 09 0.52 (5.15014d) Equinox: J2000	Proper Motion RA: 95.87 mas/yr Proper Motion Dec: 3.97 mas/yr Epoch of Position: 1991.25	V=7.36	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(5) HD-28069	(5) HD-28069	STIS/CCD, ACQ, F25ND3	MIRROR				0.5 Secs [==>]	[1]
	2	(5) HD-28069	(5) HD-28069	STIS/CCD, ACCUM, WEDGEA1.0	MIRROR	CR-SPLIT=7; GAIN=4			945 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)] [==>(Split 5)] [==>(Split 6)] [==>(Split 7)]	[1]
	3	(5) HD-28069	(5) HD-28069	STIS/CCD, ACCUM, WEDGEA1.0	MIRROR	CR-SPLIT=7; GAIN=4			945 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)] [==>(Split 5)] [==>(Split 6)] [==>(Split 7)]	[1]



Proposal 12573 - Visit 10 - STIS Coronagraphy of New Debris Disks from the WISE All-Sky Survey

Wed Sep 12 01:02:49 GMT 2012

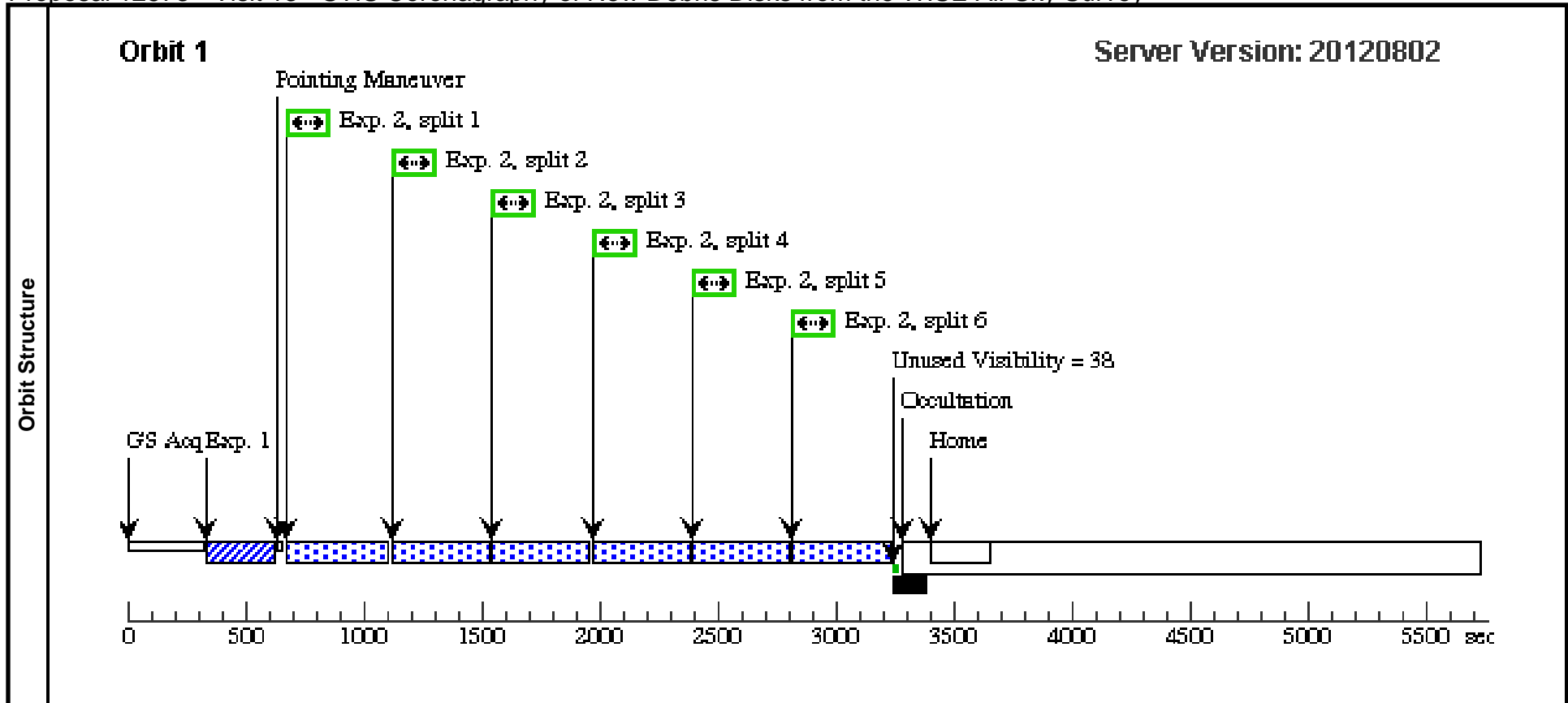
Visit	Proposal 12573, Visit 10, scheduling Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD Special Requirements: ORIENT 30D TO 40D FROM 09: AFTER 09 BY 0.8 Orbits TO 1.2 Orbits									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(5)	HD-28069	RA: 04 25 57.3388 (66.4889117d) Dec: +05 09 0.52 (5.15014d) Equinox: J2000	Proper Motion RA: 95.87 mas/yr Proper Motion Dec: 3.97 mas/yr Epoch of Position: 1991.25	V=7.36	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(5) HD-28069	STIS/CCD, ACQ, F25ND3	MIRROR					0.5 Secs [==>]	[1]
2	(5) HD-28069	STIS/CCD, ACCUM, WEDGEA1.0	MIRROR	CR-SPLIT=7; GAIN=4				945 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)] [==>(Split 5)] [==>(Split 6)] [==>(Split 7)]	[1]	
3	(5) HD-28069	STIS/CCD, ACCUM, WEDGEA1.0	MIRROR	CR-SPLIT=7; GAIN=4				945 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)] [==>(Split 5)] [==>(Split 6)] [==>(Split 7)]	[1]	



Proposal 12573 - Visit 13 - STIS Coronagraphy of New Debris Disks from the WISE All-Sky Survey

Wed Sep 12 01:02:50 GMT 2012

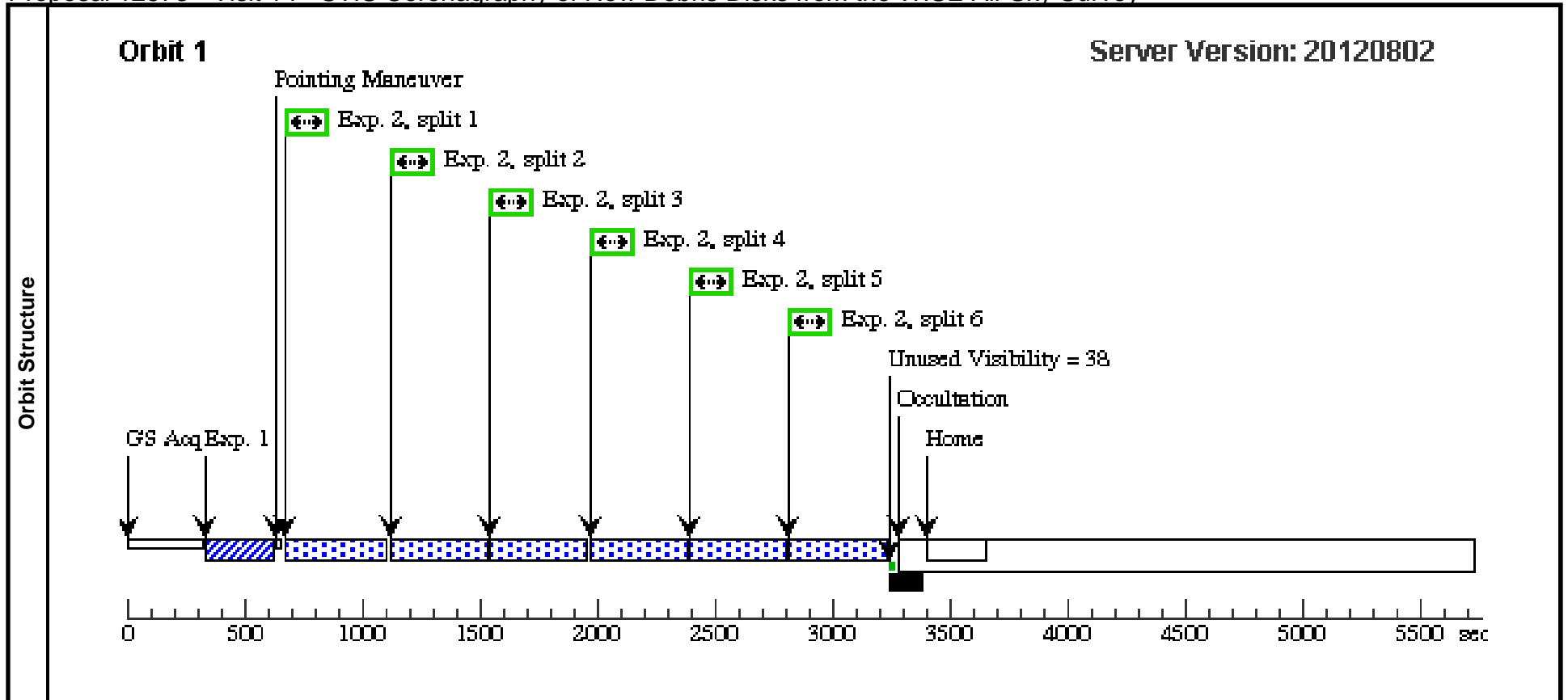
Visit	Proposal 12573, Visit 13, completed Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD Special Requirements: (none)									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(7)	HD-55918	RA: 07 16 25.3330 (109.1055542d) Alt Name1: HIP-35198 Dec: +35 01 2.62 (35.01739d) Equinox: J2000	Proper Motion RA: -126.04 mas/yr Proper Motion Dec: 18.40 mas/yr Parallax: 0.0285" Epoch of Position: 1991.25	V=8.5	Reference Frame: ICRS				
	<i>Comments: Replaces target #6 (HD-172669)</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(7) HD-55918	STIS/CCD, ACQ, F25ND3	MIRROR				0.5 Secs [==>]	[1]
2		(7) HD-55918	STIS/CCD, ACCUM, WEDGEA1.0	MIRROR	CR-SPLIT=6; GAIN=4			2280 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)] [==>(Split 5)] [==>(Split 6)]	[1]	



Proposal 12573 - Visit 14 - STIS Coronagraphy of New Debris Disks from the WISE All-Sky Survey

Wed Sep 12 01:02:51 GMT 2012

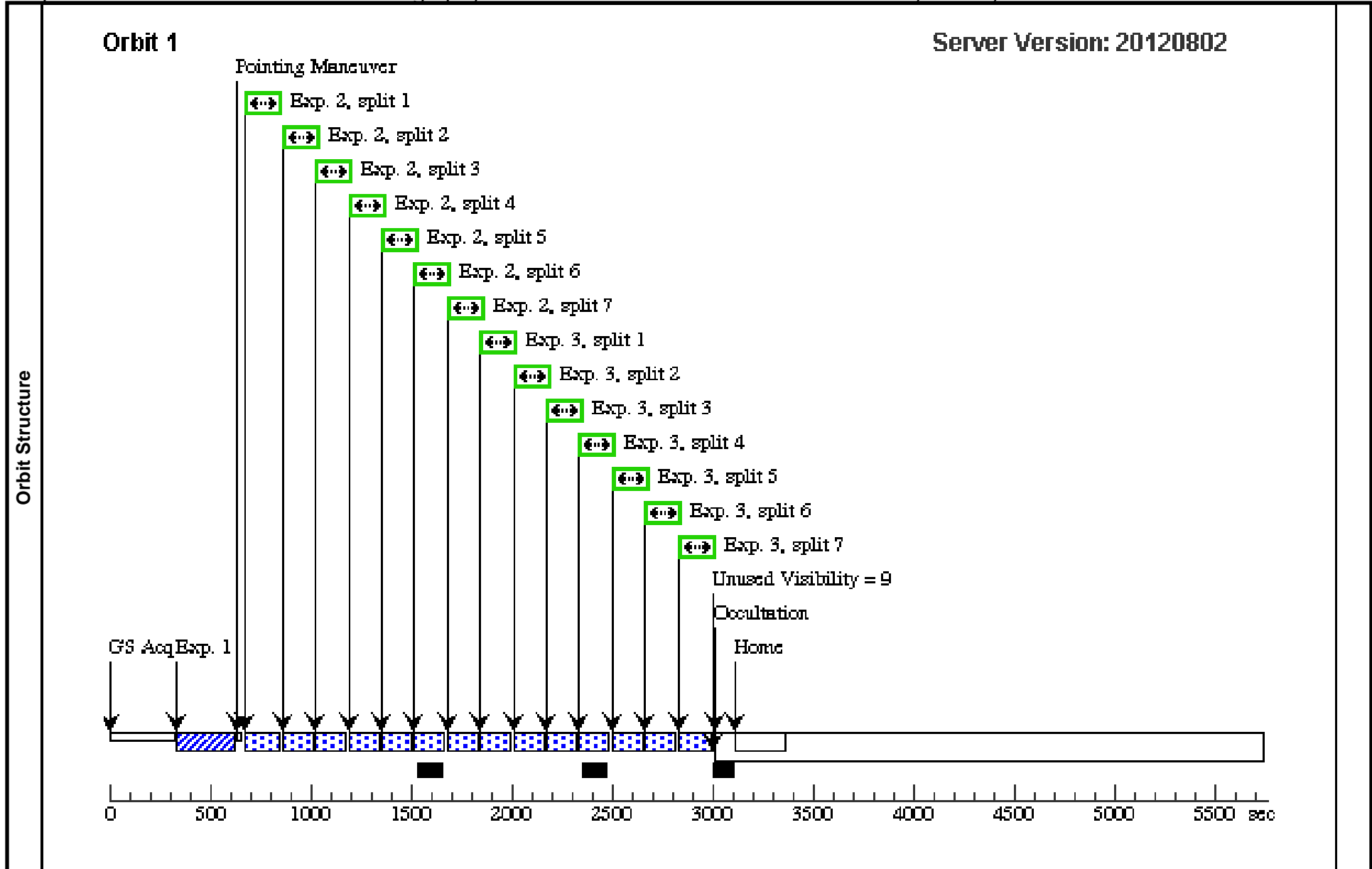
Visit	Proposal 12573, Visit 14, completed Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD Special Requirements: ORIENT 30D TO 40D FROM 13; AFTER 13 BY 0.8 Orbits TO 1.2 Orbits									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(7)	HD-55918 Alt Name1: HIP-35198	RA: 07 16 25.3330 (109.1055542d) Dec: +35 01 2.62 (35.01739d) Equinox: J2000	Proper Motion RA: -126.04 mas/yr Proper Motion Dec: 18.40 mas/yr Parallax: 0.0285" Epoch of Position: 1991.25	V=8.5	Reference Frame: ICRS				
	<i>Comments: Replaces target #6 (HD-172669)</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(7) HD-55918	STIS/CCD, ACQ, F25ND3	MIRROR				0.5 Secs [==>]	[1]
	2		(7) HD-55918	STIS/CCD, ACCUM, WEDGEA1.0	MIRROR	CR-SPLIT=6; GAIN=4			2280 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)] [==>(Split 5)] [==>(Split 6)]	[1]



Proposal 12573 - Visit 15 - STIS Coronagraphy of New Debris Disks from the WISE All-Sky Survey

Wed Sep 12 01:02:52 GMT 2012

Visit	Proposal 12573, Visit 15 Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD Special Requirements: SCHED 100%; ORIENT 350D TO 2 D; ORIENT 170D TO 182 D Comments: Debris disk seen by Herschel has PA=131 deg. The orientation is specified here to place the disk approximately perpendicular to Wedge A.									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(8)	HD-24649 Alt Name1: HIP-18187	RA: 03 53 27.2164 (58.3634017d) Dec: -41 13 21.74 (-41.22271d) Equinox: J2000	Proper Motion RA: 28.28 mas/yr Proper Motion Dec: 66.63 mas/yr Epoch of Position: 1991.25	V=7.22	Reference Frame: ICRS				
	Comments: Replaces HD 10269									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(8) HD-24649		STIS/CCD, ACQ, F25ND3	MIRROR				0.5 Secs [==>]	[1]
	2	(8) HD-24649		STIS/CCD, ACCUM, WEDGEA1.0	MIRROR	CR-SPLIT=7; GAIN=4			840 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)] [==>(Split 5)] [==>(Split 6)] [==>(Split 7)]	[1]
	3	(8) HD-24649		STIS/CCD, ACCUM, WEDGEA1.0	MIRROR	CR-SPLIT=7; GAIN=4			840 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)] [==>(Split 5)] [==>(Split 6)] [==>(Split 7)]	[1]



Proposal 12573 - Visit 16 - STIS Coronagraphy of New Debris Disks from the WISE All-Sky Survey

Wed Sep 12 01:02:53 GMT 2012

Visit	Proposal 12573, Visit 16 Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD Special Requirements: SCHED 100%; ORIENT 30D TO 40D FROM 15; AFTER 15 BY 0.8 Orbits TO 1.2 Orbits									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(8)	HD-24649 Alt Name1: HIP-18187	RA: 03 53 27.2164 (58.3634017d) Dec: -41 13 21.74 (-41.22271d) Equinox: J2000	Proper Motion RA: 28.28 mas/yr Proper Motion Dec: 66.63 mas/yr Epoch of Position: 1991.25	V=7.22	Reference Frame: ICRS				
	<i>Comments: Replaces HD 10269</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(8) HD-24649	STIS/CCD, ACQ, F25ND3	MIRROR				0.5 Secs [==>]	[1]
	2		(8) HD-24649	STIS/CCD, ACCUM, WEDGEA1.0	MIRROR	CR-SPLIT=7; GAIN=4			840 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)] [==>(Split 5)] [==>(Split 6)] [==>(Split 7)]	[1]
	3		(8) HD-24649	STIS/CCD, ACCUM, WEDGEA1.0	MIRROR	CR-SPLIT=7; GAIN=4			840 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)] [==>(Split 5)] [==>(Split 6)] [==>(Split 7)]	[1]

