



## 13462 - Tracking the Winds of Red Giants from the Star to the ISM

Cycle: 21, Proposal Category: GO

(UV Initiative)

(Availability Mode: SUPPORTED)

### INVESTIGATORS

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### 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) HD59717	STIS/CCD STIS/FUV-MAMA STIS/NUV-MAMA	4	11-Jun-2013 02:20:05.0	yes
02	(2) HD211416	STIS/CCD STIS/FUV-MAMA STIS/NUV-MAMA	4	11-Jun-2013 02:20:23.0	yes
03	(3) HD50778	STIS/CCD STIS/FUV-MAMA STIS/NUV-MAMA	4	11-Jun-2013 02:20:38.0	yes
04	(4) HD120323	STIS/CCD STIS/FUV-MAMA STIS/NUV-MAMA	4	11-Jun-2013 02:20:52.0	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>
05	(5) HD25025	STIS/CCD STIS/FUV-MAMA STIS/NUV-MAMA	4	11-Jun-2013 02:21:06.0	yes
06	(6) HD20720	STIS/CCD STIS/FUV-MAMA STIS/NUV-MAMA	4	11-Jun-2013 02:21:20.0	yes
07	(7) HD87837	STIS/CCD STIS/FUV-MAMA STIS/NUV-MAMA	4	11-Jun-2013 02:21:37.0	yes
08	(8) HD66141	STIS/CCD STIS/FUV-MAMA STIS/NUV-MAMA	4	11-Jun-2013 02:21:53.0	yes
09	(9) HD44478	STIS/CCD STIS/FUV-MAMA STIS/NUV-MAMA	4	11-Jun-2013 02:22:07.0	yes

36 Total Orbits Used

### **ABSTRACT**

We propose to study the stellar winds of nine red giants from their origins near the stellar surface all the way to their merger with the ambient ISM. We will do so by studying absorption features in UV emission lines observed with STIS. The STIS spectra will include many broad absorption lines from the stellar wind. We expect that at least some of the spectra will also show narrow astrospheric absorption from the wind-ISM interaction, like that which has been observed in the Mg II h & k lines of Alpha Tau (K5 III). The astrospheric absorption will be used to study the nature of the wind-ISM collision, and will also be used as an in situ probe of ISM properties in the Local Bubble.

### **OBSERVING DESCRIPTION**

We will observe nine red giants with STIS for 4 orbits each. We acquire each of our rather bright stars with a 0.1 second exposure onto the STIS/CCD with the F28X500II filter. An accurate wavelength scale is important for our purposes so we will perform a peakup into the narrow

## Proposal 13462 (STScI Edit Number: 0, Created: Tuesday, June 11, 2013 1:22:16 AM EST) - Overview

0.3X0.05ND aperture. This neutral density aperture is required to reduce the flux for our bright targets and we use a 0.1 s exposure for the peakups. After acquisition and peakup, the first orbit will consist of an E230H spectrum of the 2574--2851 Å wavelength range through the 0.2X0.09 aperture. The remaining three orbits will be used for an E140M spectrum of the 1150--1700 Å wavelength range through the 0.2X0.2 aperture. All of our targets are comfortably in compliance with STIS/MAMA bright object limits, as verified using both Table 13.44 in the STIS Instrument Handbook and the online STIS exposure time calculator.

The E230H observation will provide the highest resolution ( $R = \lambda / \Delta\lambda = 110,000$ ) spectrum of the Mg II h & k lines at 2800 Å. High resolution is required for studying the narrow astrospheric absorption. We can only crudely predict line fluxes for our target stars, so accurately predicting signal-to-noise (S/N) is problematic. The best we can do is assume that intrinsic fluxes are similar to those seen for Alpha Tau, and then correct for target distance. After acquisition, peakup, and observational overhead are considered, we expect at least 28 minutes to be available in the first orbit for the E230H exposure. We expect this to be more than enough time to attain very high S/N of  $\sim 100$  at line center for the strong Mg II lines. We also expect to see numerous Fe II lines in the spectrum at lower S/N, for which we can also study stellar wind and possibly astrospheric absorption.

After acquisition and overheads are considered, we expect our 3-orbit E140M exposure to amount to about 135 minutes of total exposure time. The O I 1300 triplet lines should all be observed at  $S/N > 25$  if fluxes are similar to Alpha Tau. This should be sufficient to study wind and astrospheric absorption in these lines. Other FUV lines, such as C II 1335, where we would also like to see wind and astrospheric absorption, will be observed at significantly lower S/N unless they are significantly stronger than they are for Alpha Tau. We also hope the exposure time will be sufficient to detect weak high-temperature lines such as the Si IV 1400 and C IV 1550 doublets, which would indicate the coexistence of coronae and massive warm winds. Note that the E140M grating does not have quite the resolution of E230H, but its  $R = 45,800$  resolution should be just good enough to mostly resolve any narrow astrospheric absorption.

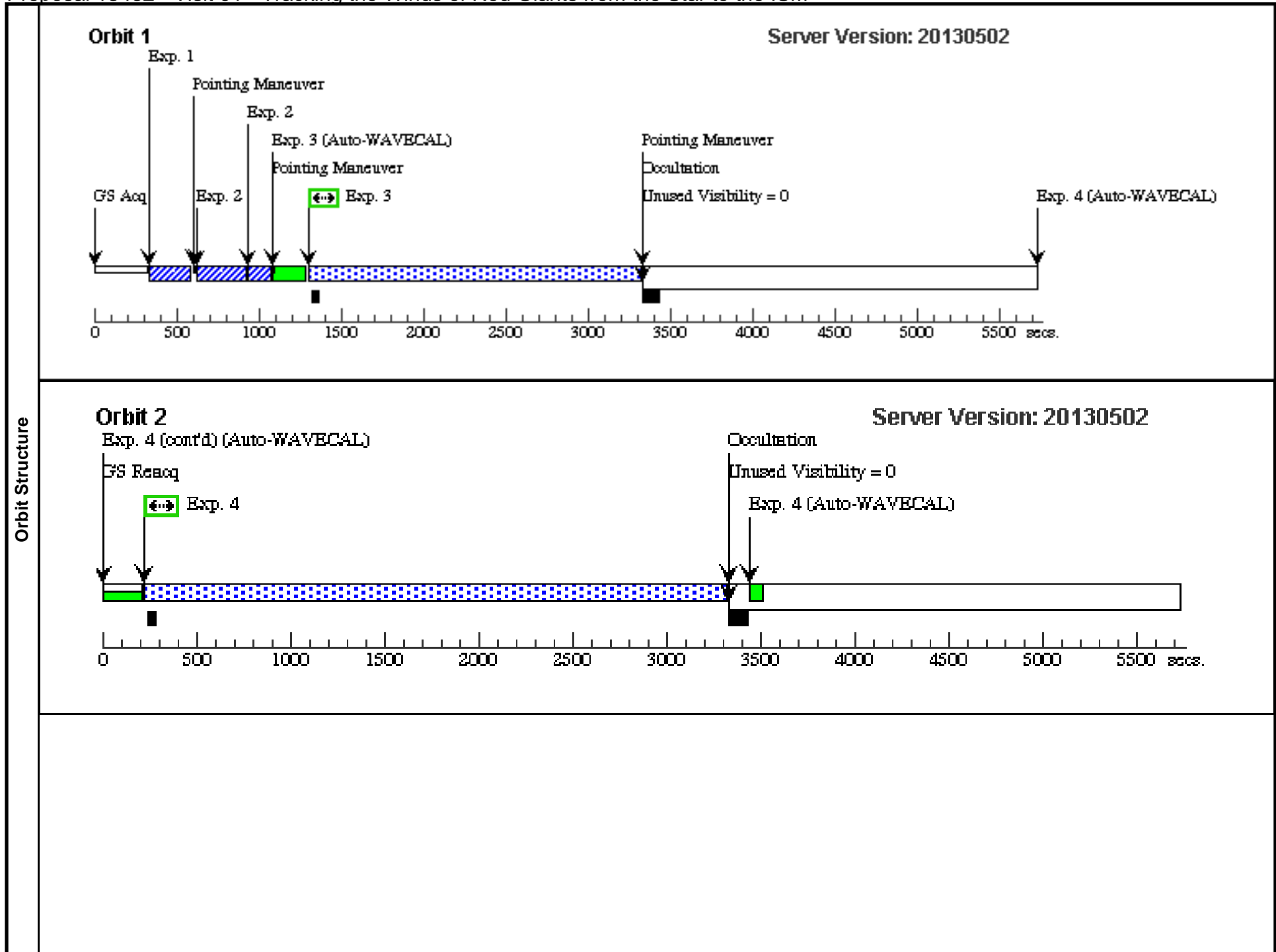
Proposal 13462 - Visit 01 - Tracking the Winds of Red Giants from the Star to the ISM

Tue Jun 11 06:22:17 GMT 2013

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	HD59717 Alt Name1: SIGMA-PUP	RA: 07 29 13.8305 (112.3076271d) Dec: -43 18 5.16 (-43.30143d) Equinox: J2000	Proper Motion RA: -59.55 mas/yr Proper Motion Dec: +188.31 mas/yr Parallax: 0.01684" Epoch of Position: 2000.0 Radial Velocity: +87.7 km/sec	V=3.25+/-0.01 TYPE=K5III, F-LINE(2796)=1.2E-11, W-LINE(2796)=0.4, F-LINE(1302)=2.7E-13, W-LINE(1302)=0.2	Reference Frame: ICRS

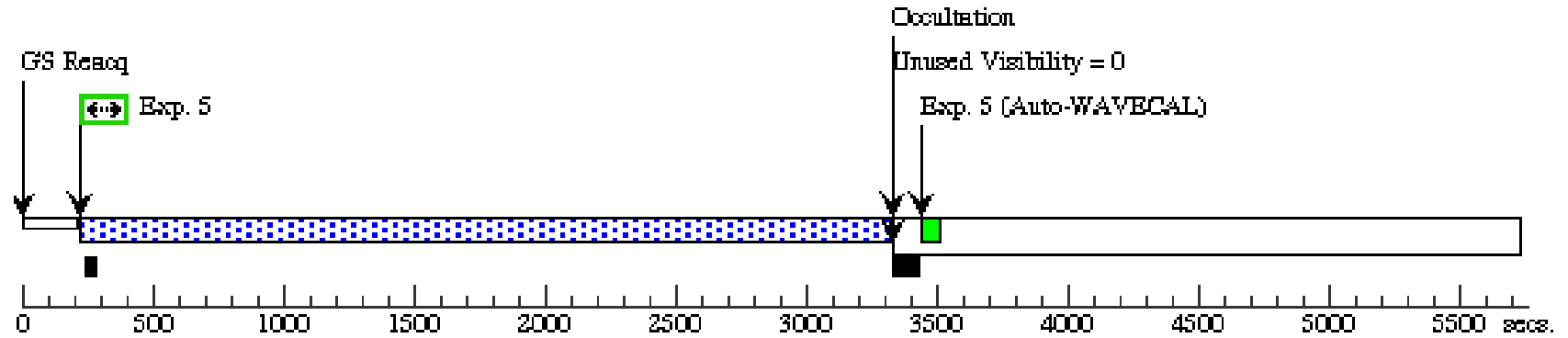
  

Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(507941)	(1) HD59717		STIS/CCD, ACQ, F28X500II	MIRROR				0.1 Secs (0.1 Secs) [==>]
2	(507942)	(1) HD59717		STIS/CCD, ACQ/PEAK, 0.3X0.05ND	MIRROR				0.1 Secs (0.1 Secs) [==>]	[1]
3	(507957)	(1) HD59717		STIS/NUV-MAMA, ACCUM, 0.2X0.09	E230H 2713 A				1680.0 Secs (2003 Secs) [==>2003.0 Secs ]	[1]
4	(507970)	(1) HD59717		STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (3081 Secs) [==>3081.0 Secs ]	[2]
5	(507970)	(1) HD59717		STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (3081 Secs) [==>3081.0 Secs ]	[3]
6	(507970)	(1) HD59717		STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (3081 Secs) [==>3081.0 Secs ]	[4]



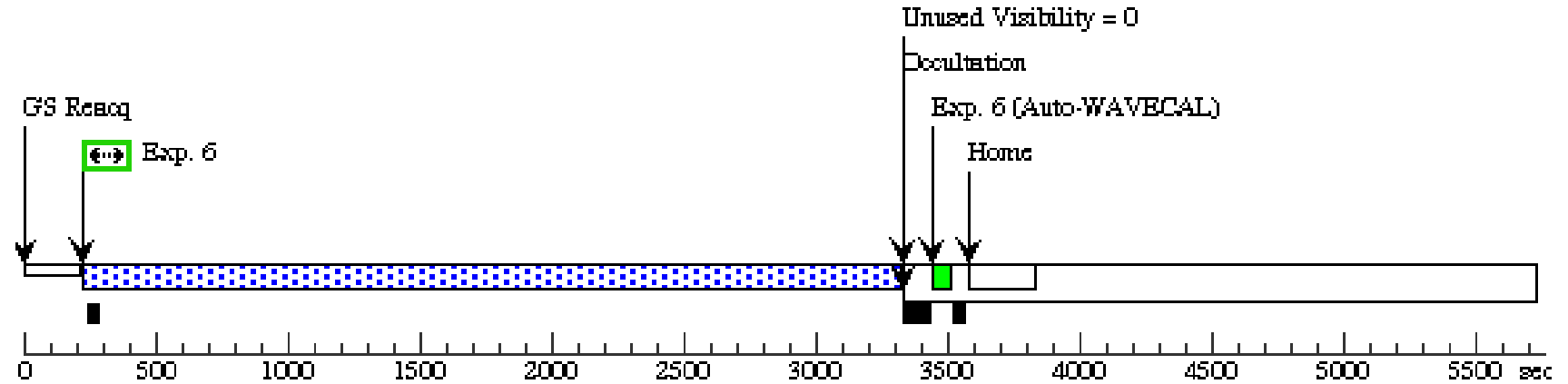
### Orbit 3

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### Orbit 4

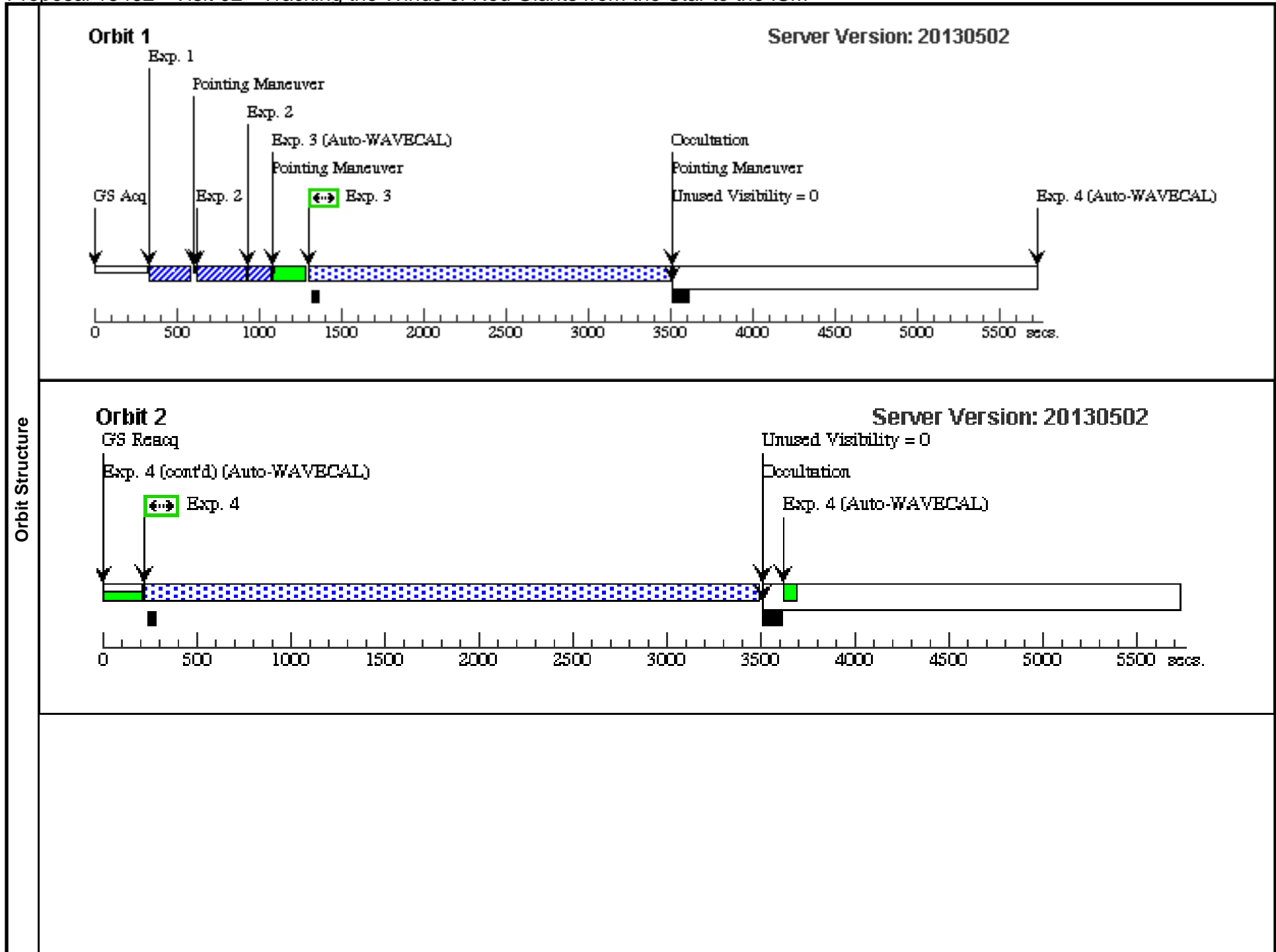
Server Version: 20130502



Proposal 13462 - Visit 02 - Tracking the Winds of Red Giants from the Star to the ISM

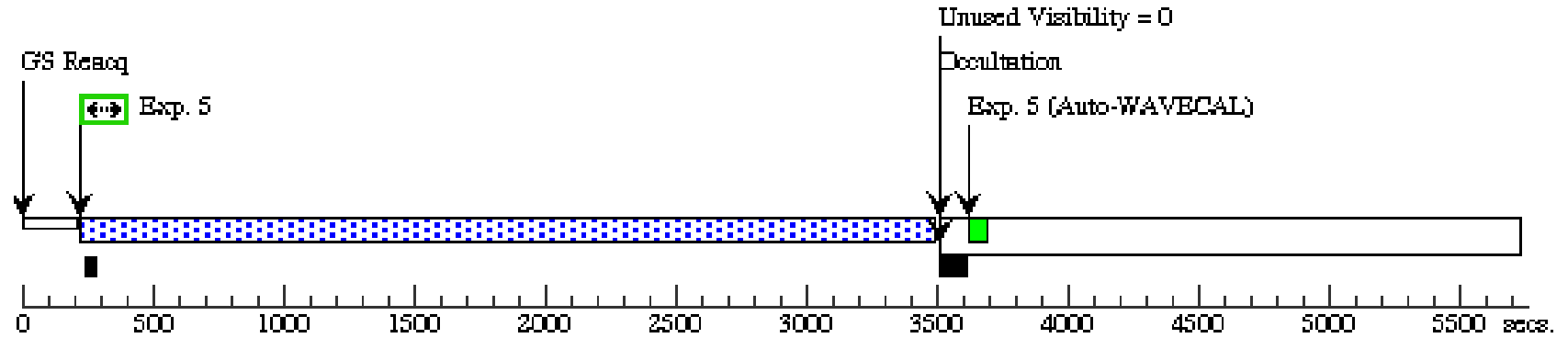
Tue Jun 11 06:22:21 GMT 2013

Visit	<b>Proposal 13462, Visit 02</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: STIS/CCD, STIS/FUV-MAMA, STIS/NUV-MAMA Special Requirements: (none)									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
		(2)	HD211416 Alt Name1: ALPHA-TUC	RA: 22 18 30.0948 (334.6253950d) Dec: -60 15 34.53 (-60.25959d) Equinox: J2000	Proper Motion RA: -70.72 mas/yr Proper Motion Dec: -39.44 mas/yr Parallax: 0.01633" Epoch of Position: 2000.0 Radial Velocity: +42.2 km/sec	V=2.86+/-0.01 TYPE=K3III, F-LINE(2796)=1.0E-11, W-LINE(2796)=0.4, F-LINE(1302)=2.2E-13, W-LINE(1302)=0.2	Reference Frame: ICRS			
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(507943)	(2) HD211416	STIS/CCD, ACQ, F28X500II	MIRROR				0.1 Secs (0.1 Secs) [==>]	[1]
	2	(507944)	(2) HD211416	STIS/CCD, ACQ/PEAK, 0.3X0.05ND	MIRROR				0.1 Secs (0.1 Secs) [==>]	[1]
	3	(507958)	(2) HD211416	STIS/NUV-MAMA, ACCUM, 0.2X0.09	E230H 2713 A				1680.0 Secs (2181 Secs) [==>2181.0 Secs ]	[1]
	4	(507971)	(2) HD211416	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (3259 Secs) [==>3259.0 Secs ]	[2]
	5	(507971)	(2) HD211416	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (3259 Secs) [==>3259.0 Secs ]	[3]
	6	(507971)	(2) HD211416	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (3259 Secs) [==>3259.0 Secs ]	[4]



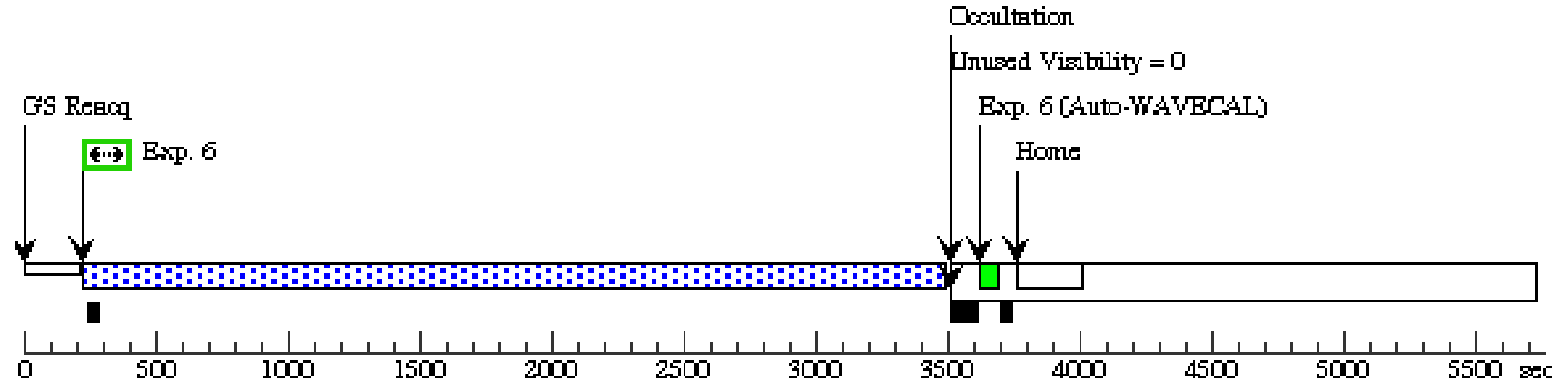
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### Orbit 4

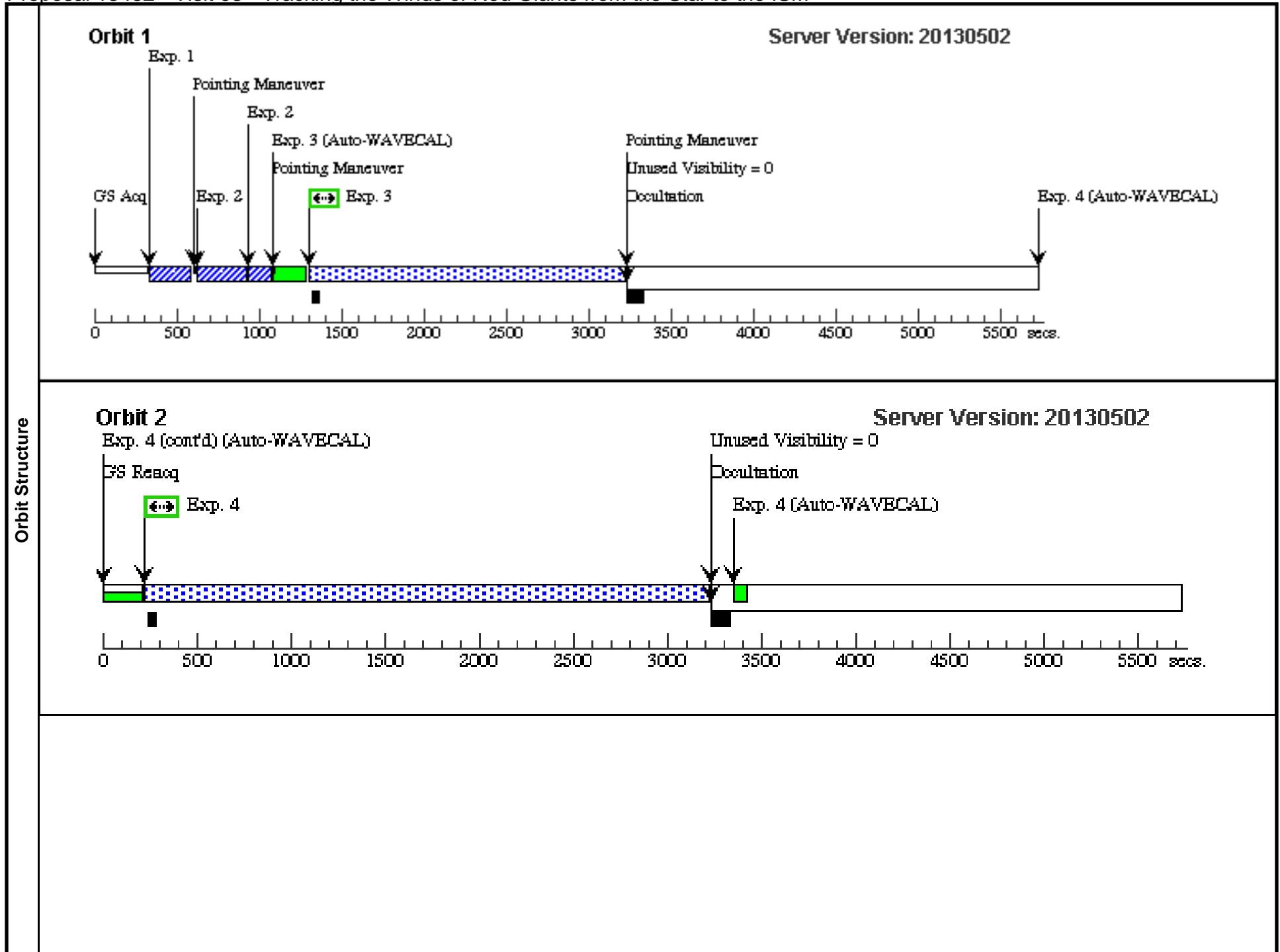
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Proposal 13462 - Visit 03 - Tracking the Winds of Red Giants from the Star to the ISM

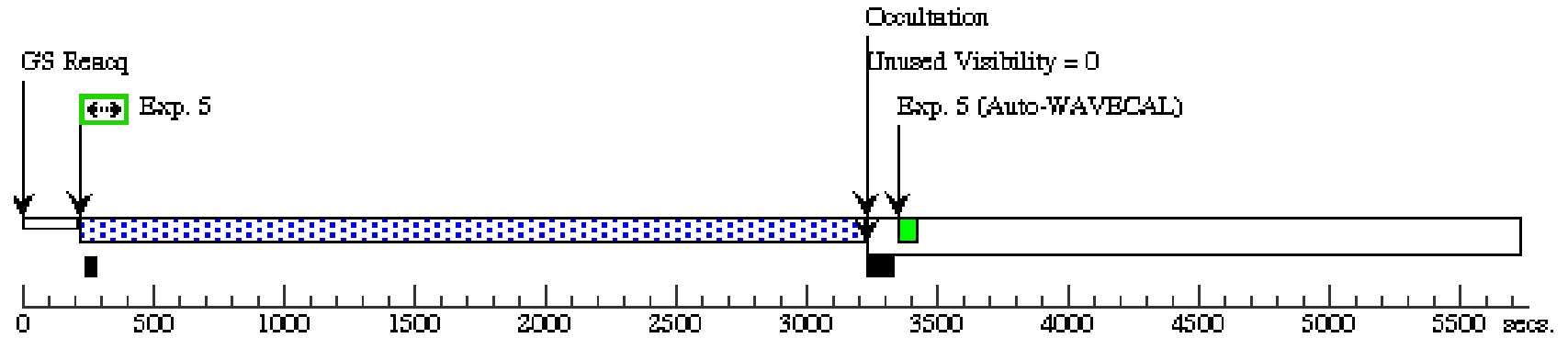
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Visit	<b>Proposal 13462, Visit 03</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: STIS/CCD, STIS/FUV-MAMA, STIS/NUV-MAMA Special Requirements: (none)									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(3)	HD50778 Alt Name1: THETA-CMA	RA: 06 54 11.3988 (103.5474950d) Dec: -12 02 19.07 (-12.03863d) Equinox: J2000	Proper Motion RA: -137.26 mas/yr Proper Motion Dec: -15.37 mas/yr Parallax: 0.01251" Epoch of Position: 2000.0 Radial Velocity: +96.16 km/sec	V=4.086+/-0.010 TYPE=K4III, F-LINE(2796)=6.3E-12, W-LINE(2796)=0.4, F-LINE(1302)=1.4E-13, W-LINE(1302)=0.2	Reference Frame: ICRS				
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(507945)	(3) HD50778	STIS/CCD, ACQ, F28X50OII	MIRROR				0.1 Secs (0.1 Secs) [==>]	[1]
	2	(507946)	(3) HD50778	STIS/CCD, ACQ/PEAK, 0.3X0.05ND	MIRROR				0.1 Secs (0.1 Secs) [==>]	[1]
	3	(507959)	(3) HD50778	STIS/NUV-MAMA, ACCUM, 0.2X0.09	E230H 2713 A				1680.0 Secs (1909 Secs) [==>1909.0 Secs ]	[1]
	4	(507976)	(3) HD50778	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (2987 Secs) [==>2987.0 Secs ]	[2]
	5	(507976)	(3) HD50778	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (2987 Secs) [==>2987.0 Secs ]	[3]
	6	(507976)	(3) HD50778	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (2987 Secs) [==>2987.0 Secs ]	[4]



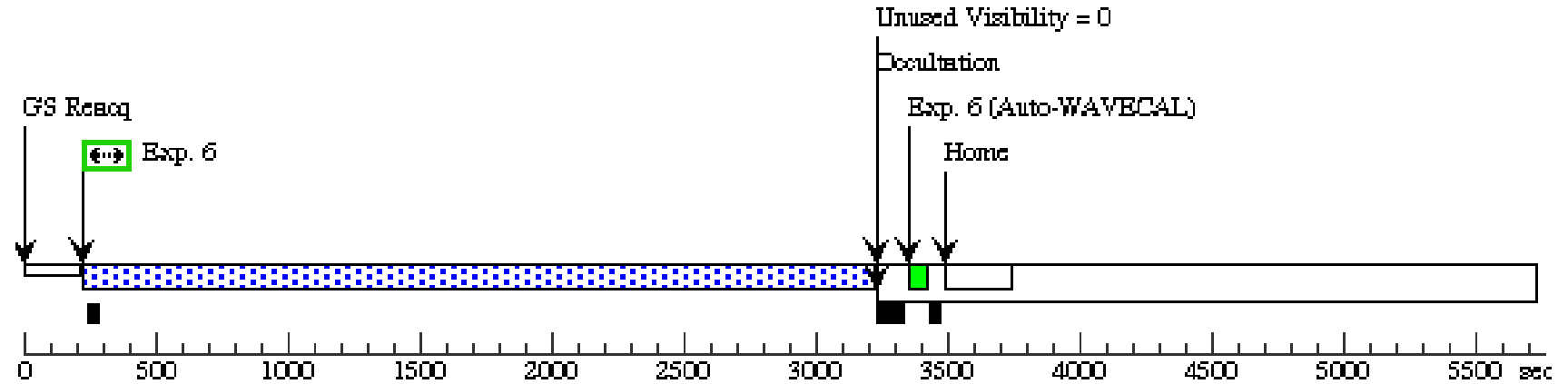
### Orbit 3

Server Version: 20130502



### Orbit 4

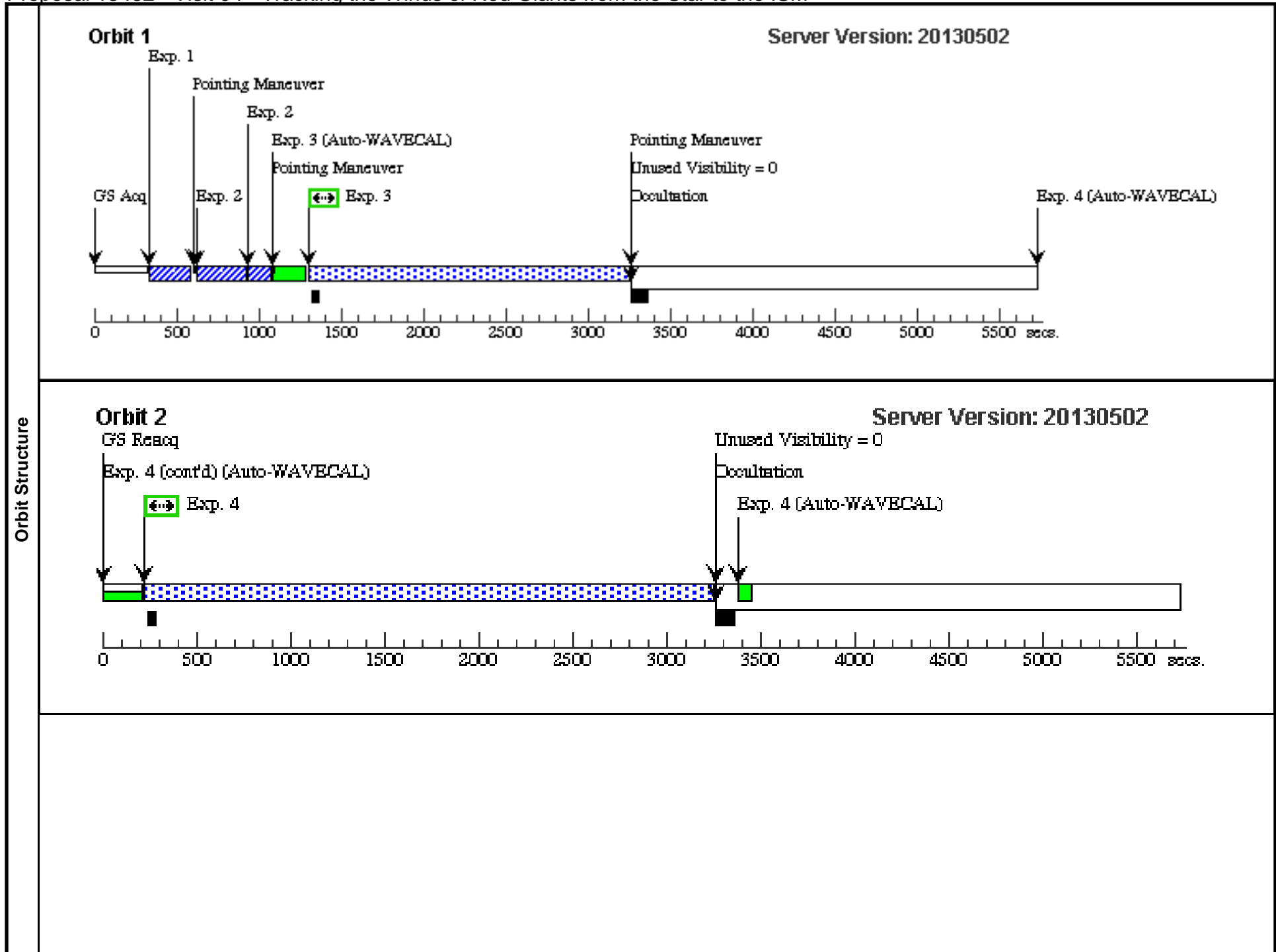
Server Version: 20130502



Proposal 13462 - Visit 04 - Tracking the Winds of Red Giants from the Star to the ISM

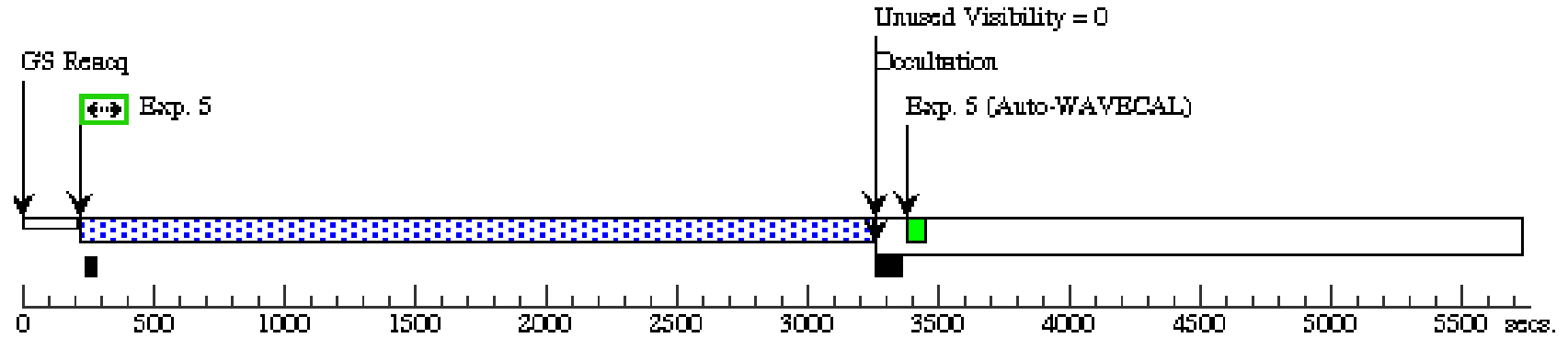
Tue Jun 11 06:22:28 GMT 2013

Visit	<b>Proposal 13462, Visit 04</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: STIS/CCD, STIS/FUV-MAMA, STIS/NUV-MAMA Special Requirements: (none)									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(4)	HD120323 Alt Name1: HR5192	RA: 13 49 26.7217 (207.3613404d) Dec: -34 27 2.79 (-34.45078d) Equinox: J2000	Proper Motion RA: -41.68 mas/yr Proper Motion Dec: -59.77 mas/yr Parallax: 0.01782" Epoch of Position: 2000.0 Radial Velocity: +40.7 km/sec	V=4.19+/-0.01 TYPE=M4.5III, F-LINE(2796)=1.3E-11, W-LINE(2796)=0.4, F-LINE(1302)=2.9E-13, W-LINE(1302)=0.2	Reference Frame: ICRS				
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(507949)	(4) HD120323	STIS/CCD, ACQ, F28X500II	MIRROR				0.1 Secs (0.1 Secs) [==>]	[1]
	2	(507950)	(4) HD120323	STIS/CCD, ACQ/PEAK, 0.3X0.05ND	MIRROR				0.1 Secs (0.1 Secs) [==>]	[1]
	3	(507961)	(4) HD120323	STIS/NUV-MAMA, ACCUM, 0.2X0.09	E230H 2713 A				1680.0 Secs (1937 Secs) [==>1937.0 Secs ]	[1]
	4	(507974)	(4) HD120323	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (3015 Secs) [==>3015.0 Secs ]	[2]
	5	(507974)	(4) HD120323	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (3015 Secs) [==>3015.0 Secs ]	[3]
	6	(507974)	(4) HD120323	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (3015 Secs) [==>3015.0 Secs ]	[4]



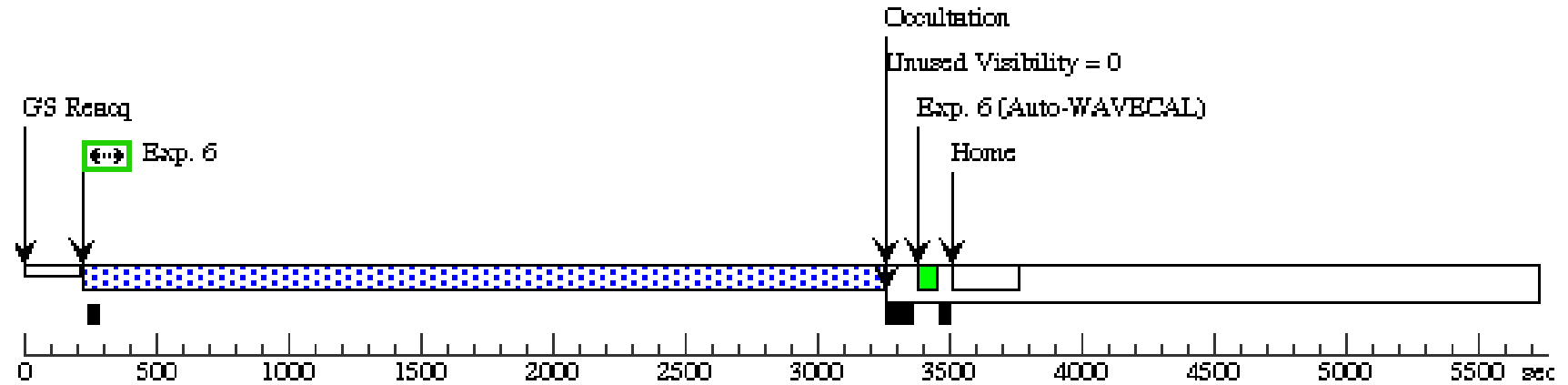
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Server Version: 20130502



### Orbit 4

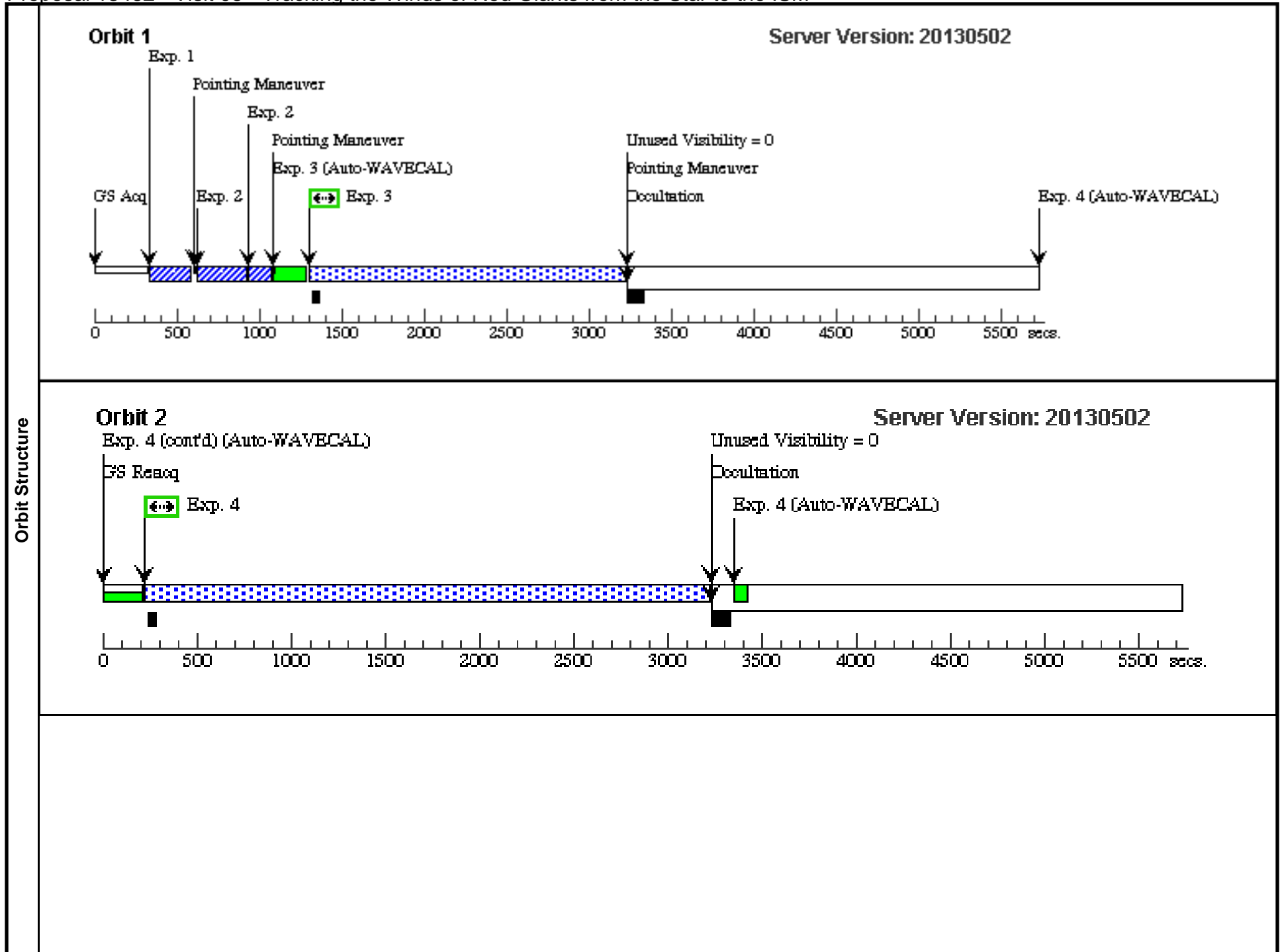
Server Version: 20130502



Proposal 13462 - Visit 05 - Tracking the Winds of Red Giants from the Star to the ISM

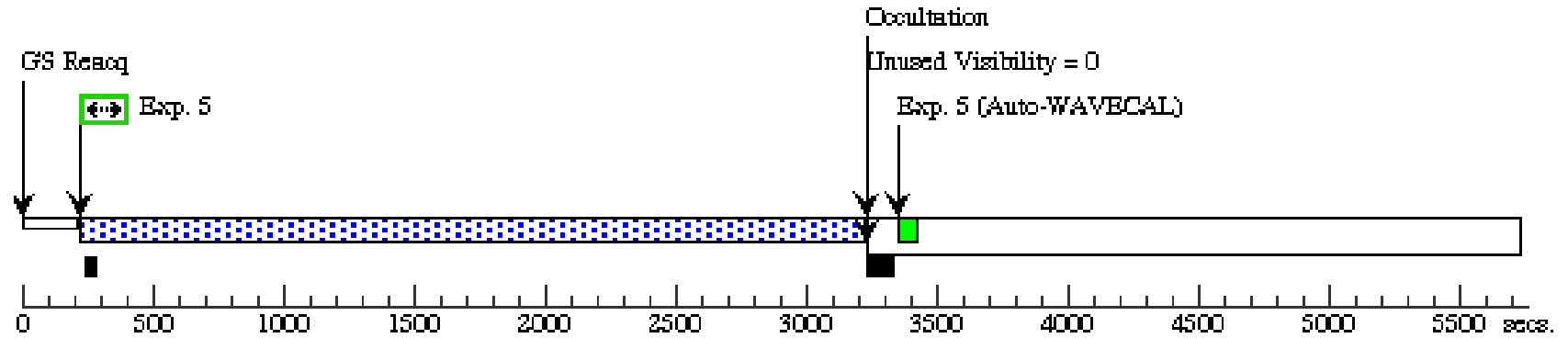
Tue Jun 11 06:22:32 GMT 2013

Visit	<b>Proposal 13462, Visit 05</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: STIS/CCD, STIS/FUV-MAMA, STIS/NUV-MAMA Special Requirements: (none)									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(5)	HD25025 Alt Name1: GAMMA-ERI	RA: 03 58 1.7670 (59.5073625d) Dec: -13 30 30.67 (-13.50852d) Equinox: J2000	Proper Motion RA: +61.57 mas/yr Proper Motion Dec: -113.11 mas/yr Parallax: 0.01604" Epoch of Position: 2000.0 Radial Velocity: +60.81 km/sec	V=2.978+/-0.01 TYPE=M1III, F-LINE(2796)=8.1E-12, W-LINE(2796)=0.4, F-LINE(1302)=1.8E-13, W-LINE(1302)=0.2	Reference Frame: ICRS				
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(507951)	(5) HD25025	STIS/CCD, ACQ, F28X500II	MIRROR				0.1 Secs (0.1 Secs) [==>]	[1]
	2	(507952)	(5) HD25025	STIS/CCD, ACQ/PEAK, 0.3X0.05ND	MIRROR				0.1 Secs (0.1 Secs) [==>]	[1]
	3	(507962)	(5) HD25025	STIS/NUV-MAMA, ACCUM, 0.2X0.09	E230H 2713 A				1680.0 Secs (1909 Secs) [==>1909.0 Secs ]	[1]
	4	(507977)	(5) HD25025	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (2987 Secs) [==>2987.0 Secs ]	[2]
	5	(507977)	(5) HD25025	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (2987 Secs) [==>2987.0 Secs ]	[3]
	6	(507977)	(5) HD25025	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (2987 Secs) [==>2987.0 Secs ]	[4]



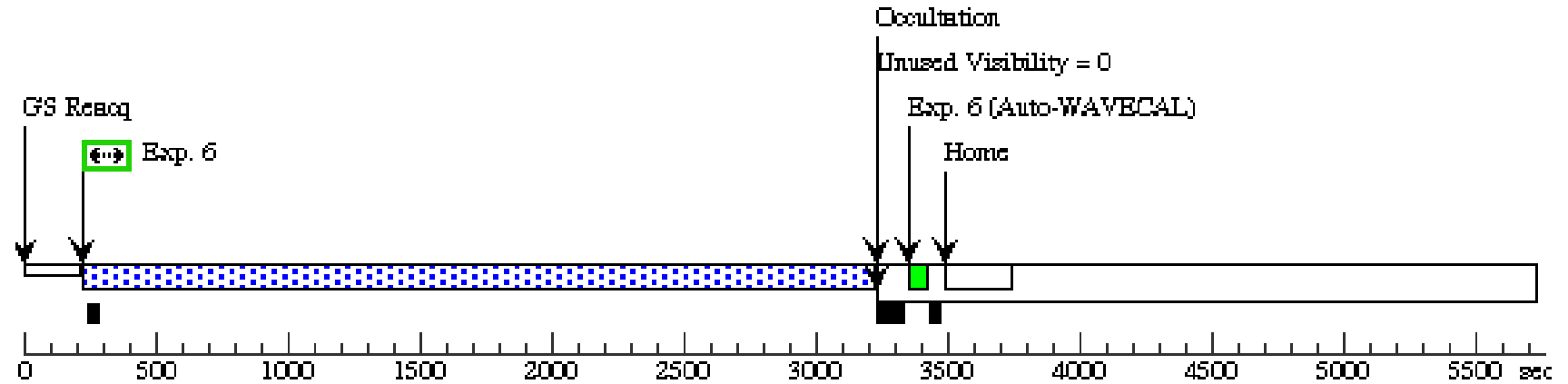
**Orbit 3**

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**Orbit 4**

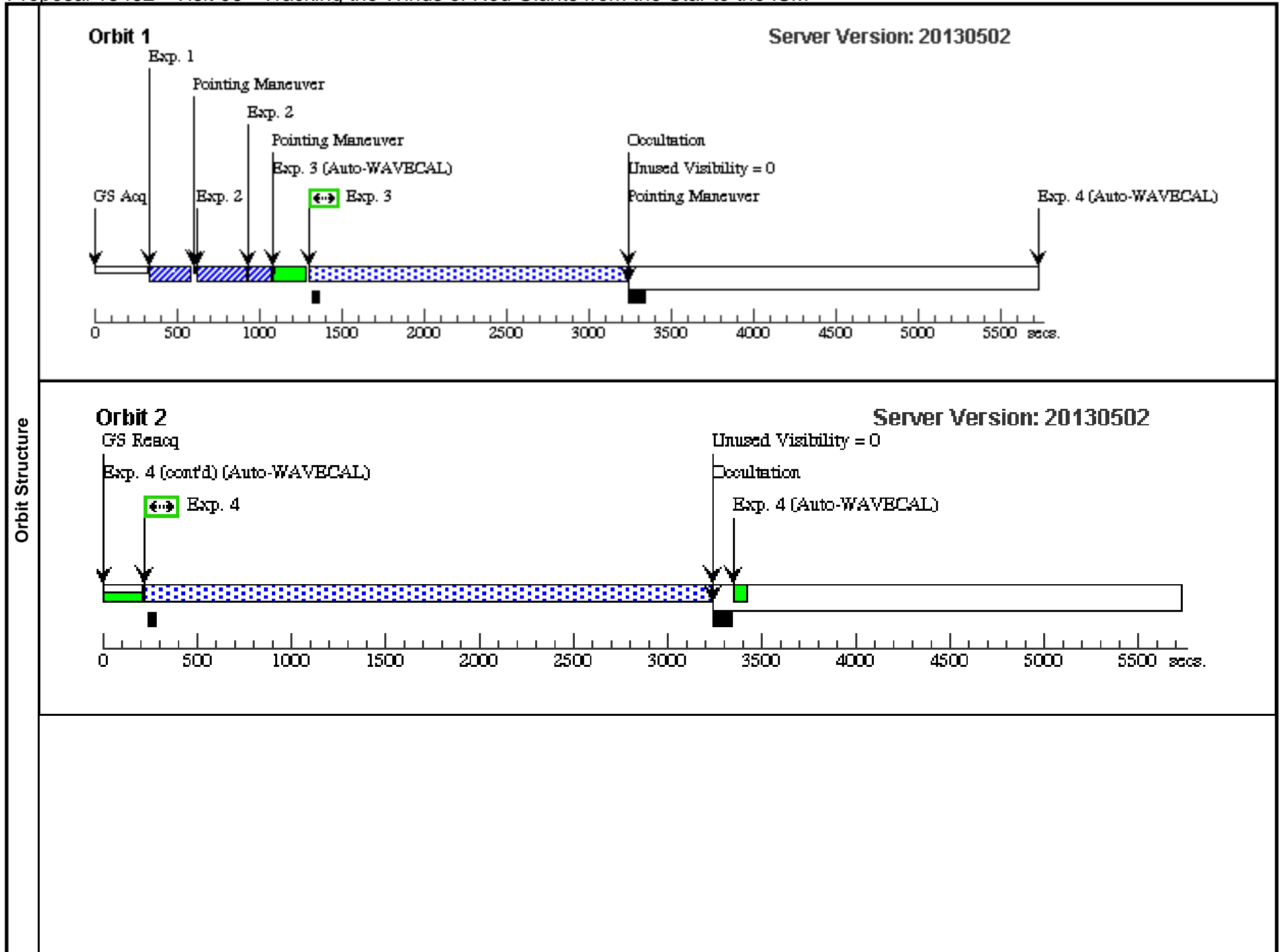
Server Version: 20130502



Proposal 13462 - Visit 06 - Tracking the Winds of Red Giants from the Star to the ISM

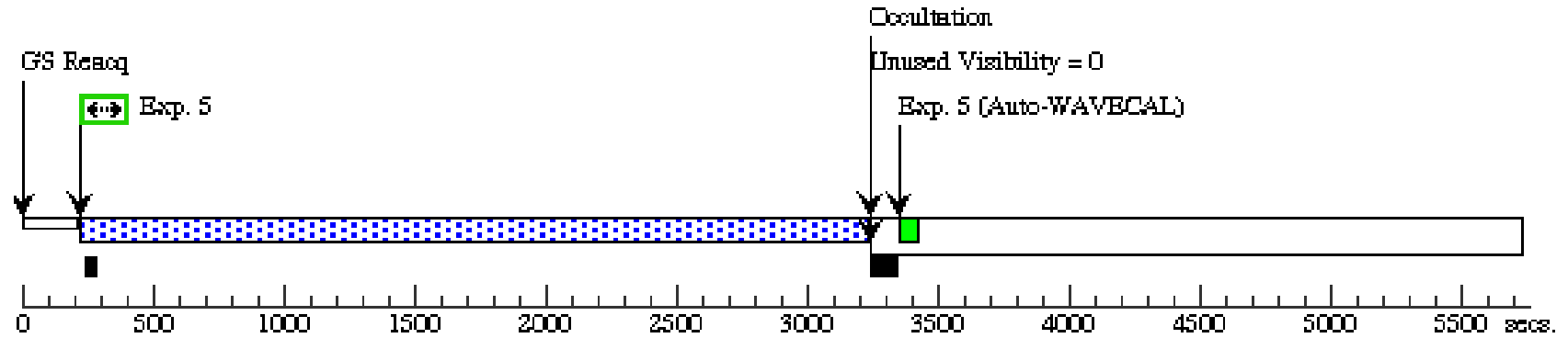
Tue Jun 11 06:22:35 GMT 2013

Visit	<b>Proposal 13462, Visit 06</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: STIS/CCD, STIS/FUV-MAMA, STIS/NUV-MAMA Special Requirements: (none)									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
		(6)	HD20720 Alt Name1: TAU4-ERI	RA: 03 19 31.0022 (49.8791758d) Dec: -21 45 28.30 (-21.75786d) Equinox: J2000	Proper Motion RA: +51.89 mas/yr Proper Motion Dec: +32.92 mas/yr Parallax: 0.01071" Epoch of Position: 2000.0 Radial Velocity: +41.7 km/sec	V=3.66+/-0.01 TYPE=M3-4III, F-LINE(2796)=6.0E-12, W-LINE(2796)=0.4, F-LINE(1302)=1.3E-13, W-LINE(1302)=0.2	Reference Frame: ICRS			
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(507953)	(6) HD20720	STIS/CCD, ACQ, F28X50OII	MIRROR				0.1 Secs (0.1 Secs) [==>]	[1]
	2	(507954)	(6) HD20720	STIS/CCD, ACQ/PEAK, 0.3X0.05ND	MIRROR				0.1 Secs (0.1 Secs) [==>]	[1]
	3	(507964)	(6) HD20720	STIS/NUV-MAMA, ACCUM, 0.2X0.09	E230H 2713 A				1680.0 Secs (1914 Secs) [==>1914.0 Secs ]	[1]
	4	(507978)	(6) HD20720	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (2992 Secs) [==>2992.0 Secs ]	[2]
	5	(507978)	(6) HD20720	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (2992 Secs) [==>2992.0 Secs ]	[3]
	6	(507978)	(6) HD20720	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (2992 Secs) [==>2992.0 Secs ]	[4]



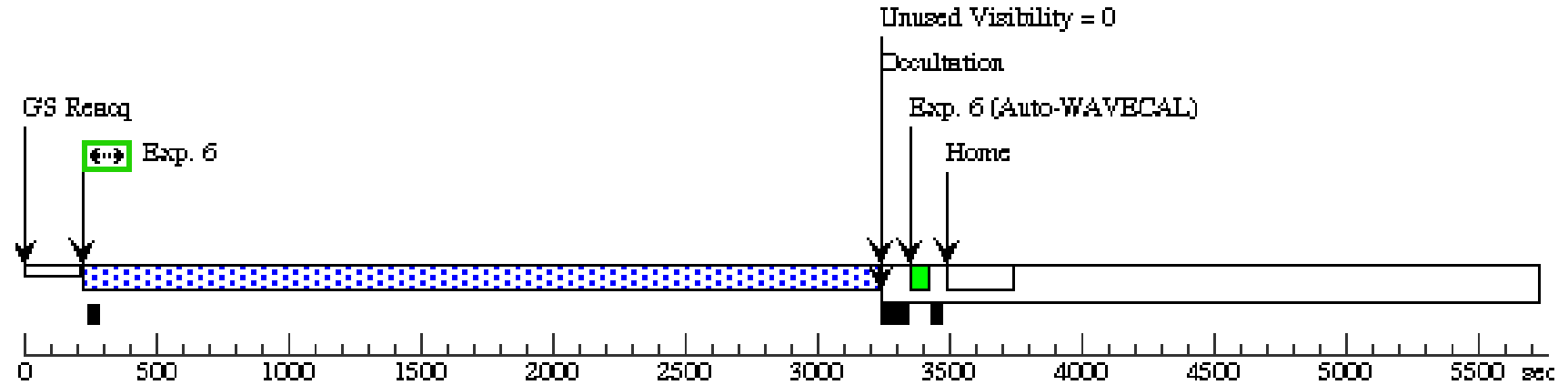
### Orbit 3

Server Version: 20130502



### Orbit 4

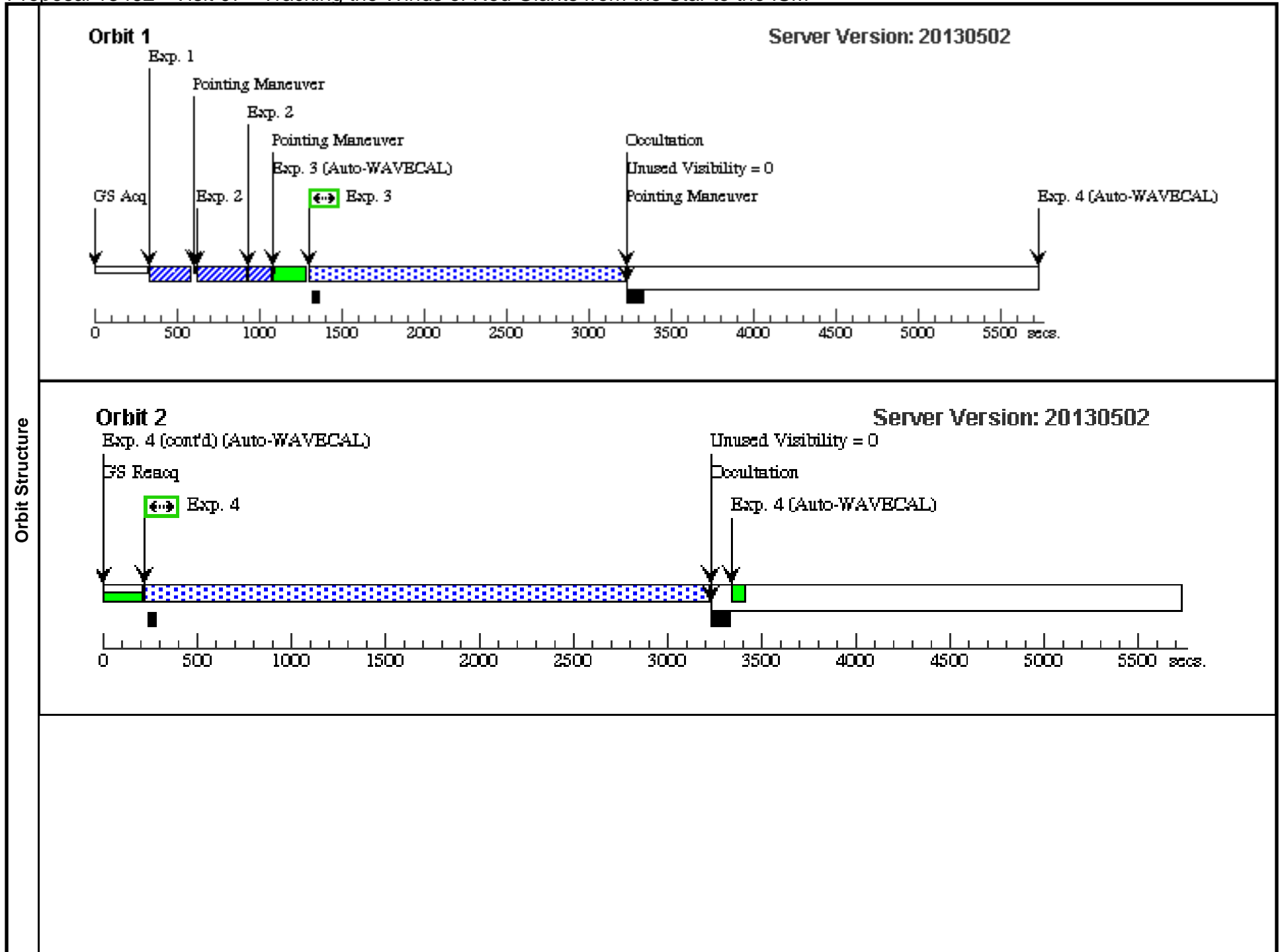
Server Version: 20130502



Proposal 13462 - Visit 07 - Tracking the Winds of Red Giants from the Star to the ISM

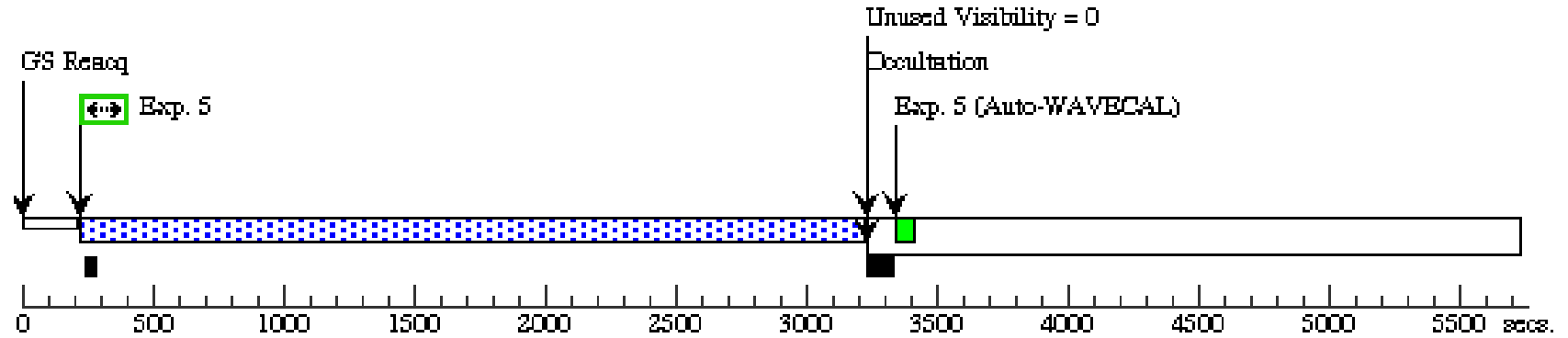
Tue Jun 11 06:22:39 GMT 2013

Visit	<b>Proposal 13462, Visit 07</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: STIS/CCD, STIS/FUV-MAMA, STIS/NUV-MAMA Special Requirements: (none)									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
		(7)	HD87837 Alt Name1: HR3980	RA: 10 07 54.2706 (151.9761275d) Dec: +09 59 51.02 (9.99751d) Equinox: J2000	Proper Motion RA: -81.44 mas/yr Proper Motion Dec: -64.73 mas/yr Parallax: 0.01104" Epoch of Position: 2000.0 Radial Velocity: +40.53 km/sec	V=4.381+/-0.01 TYPE=K4III, F-LINE(2796)=5.3E-12, W-LINE(2796)=0.4, F-LINE(1302)=1.2E-13, W-LINE(1302)=0.2	Reference Frame: ICRS			
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(507947)	(7) HD87837	STIS/CCD, ACQ, F28X500II	MIRROR				0.1 Secs (0.1 Secs) [==>]	[1]
	2	(507948)	(7) HD87837	STIS/CCD, ACQ/PEAK, 0.3X0.05ND	MIRROR				0.1 Secs (0.1 Secs) [==>]	[1]
	3	(507966)	(7) HD87837	STIS/NUV-MAMA, ACCUM, 0.2X0.09	E230H 2713 A				1680.0 Secs (1903 Secs) [==>1903.0 Secs ]	[1]
	4	(507979)	(7) HD87837	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (2981 Secs) [==>2981.0 Secs ]	[2]
	5	(507979)	(7) HD87837	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (2981 Secs) [==>2981.0 Secs ]	[3]
	6	(507979)	(7) HD87837	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (2981 Secs) [==>2981.0 Secs ]	[4]



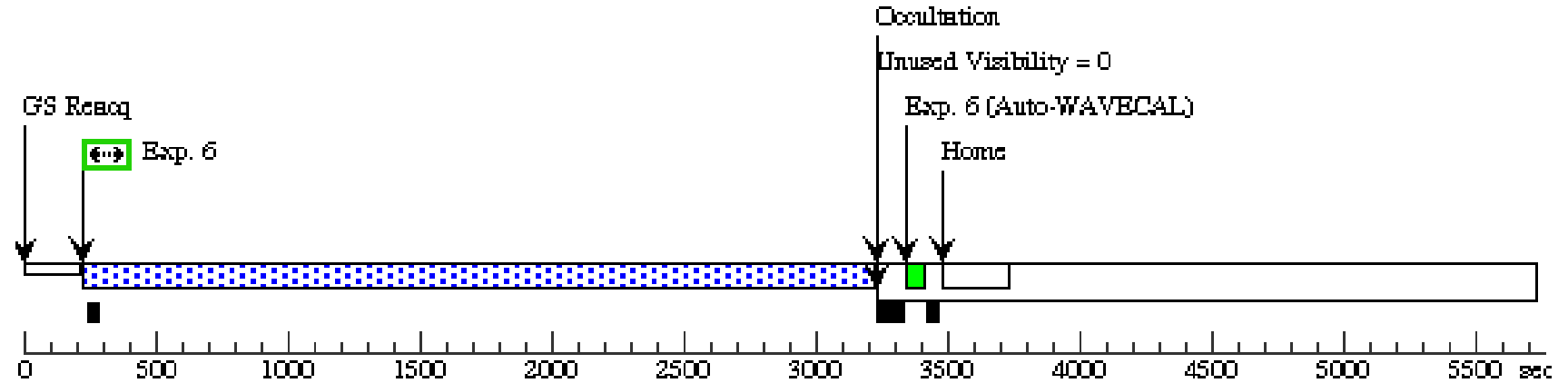
### Orbit 3

Server Version: 20130502



### Orbit 4

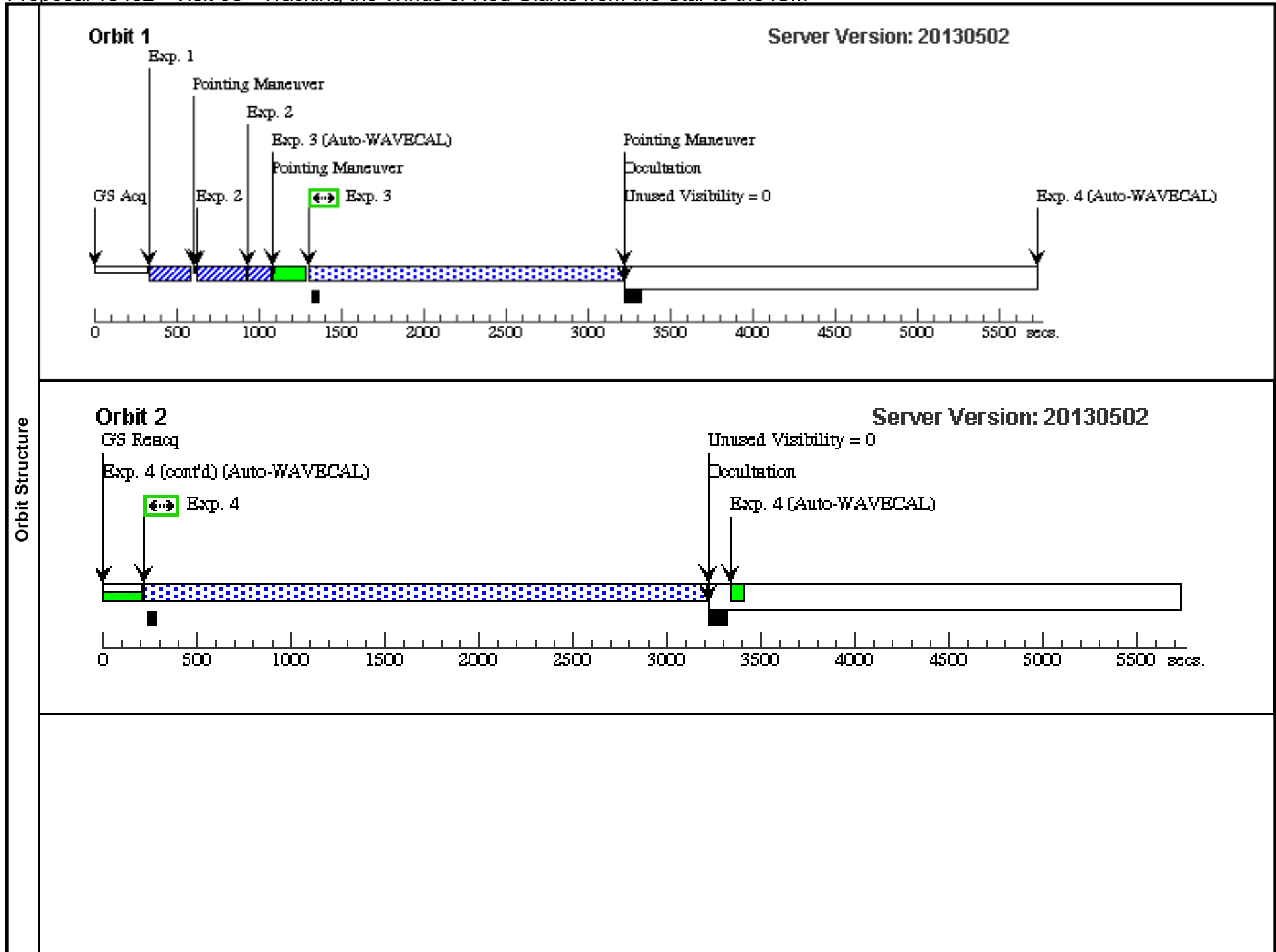
Server Version: 20130502



Proposal 13462 - Visit 08 - Tracking the Winds of Red Giants from the Star to the ISM

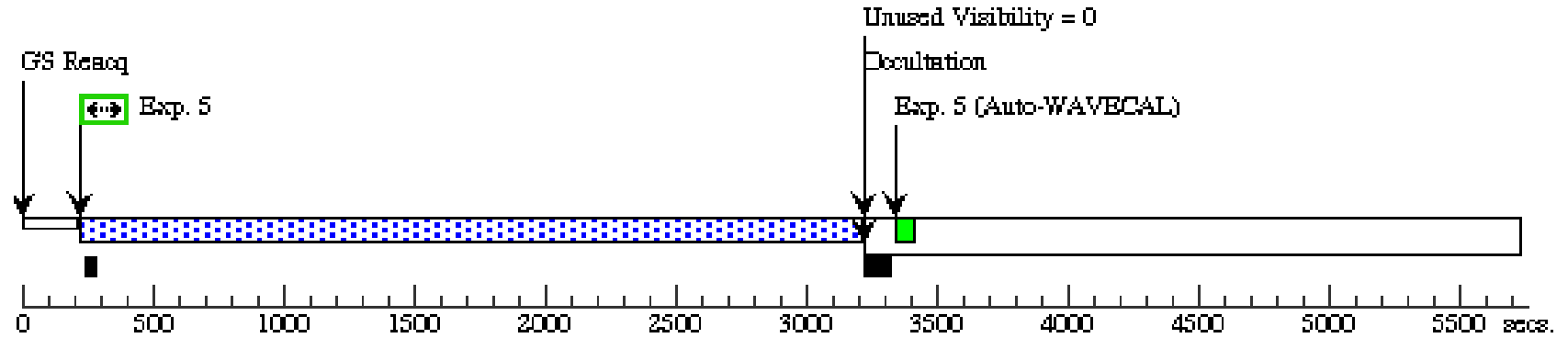
Tue Jun 11 06:22:42 GMT 2013

Visit	<b>Proposal 13462, Visit 08</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: STIS/CCD, STIS/FUV-MAMA, STIS/NUV-MAMA Special Requirements: (none)									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(8)	HD66141 Alt Name1: HR-3145	RA: 08 02 15.9366 (120.5664025d) Dec: +02 20 4.45 (2.33457d) Equinox: J2000	Proper Motion RA: -28.63 mas/yr Proper Motion Dec: +105.27 mas/yr Parallax: 0.01284" Epoch of Position: 2000.0 Radial Velocity: +71.77 km/sec	V=4.396+/-0.01 TYPE=K2III, F-LINE(2796)=5.8E-12, W-LINE(2796)=0.4, F-LINE(1302)=1.3E-13, W-LINE(1302)=0.2	Reference Frame: ICRS				
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(507947)	(8) HD66141	STIS/CCD, ACQ, F28X50OII	MIRROR				0.1 Secs (0.1 Secs) [==>]	[1]
	2	(507948)	(8) HD66141	STIS/CCD, ACQ/PEAK, 0.3X0.05ND	MIRROR				0.1 Secs (0.1 Secs) [==>]	[1]
	3	(507968)	(8) HD66141	STIS/NUV-MAMA, ACCUM, 0.2X0.09	E230H 2713 A				1680.0 Secs (1899 Secs) [==>1899.0 Secs ]	[1]
	4	(507981)	(8) HD66141	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (2977 Secs) [==>2977.0 Secs ]	[2]
	5	(507981)	(8) HD66141	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (2977 Secs) [==>2977.0 Secs ]	[3]
	6	(507981)	(8) HD66141	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (2977 Secs) [==>2977.0 Secs ]	[4]



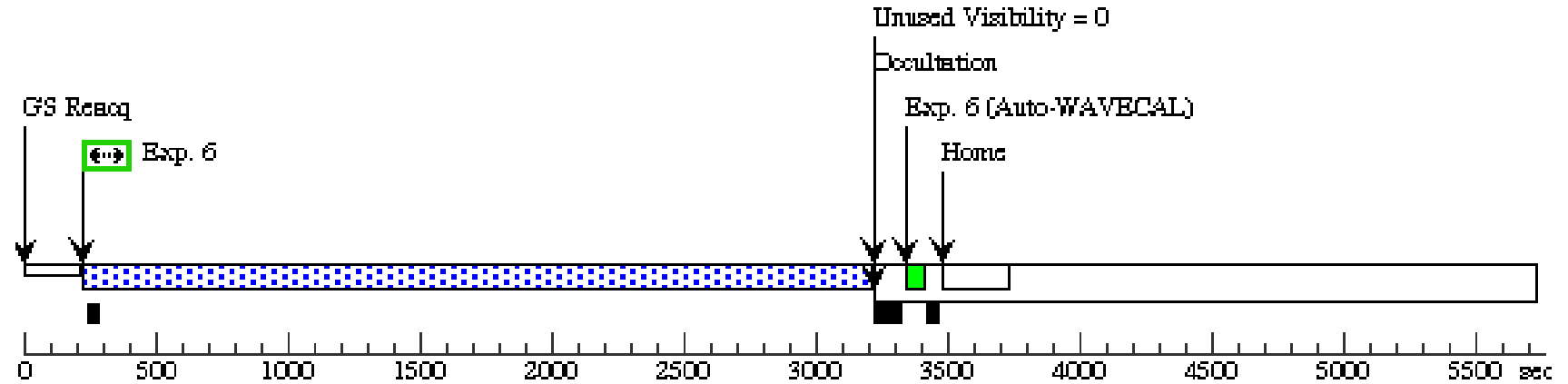
**Orbit 3**

Server Version: 20130502



**Orbit 4**

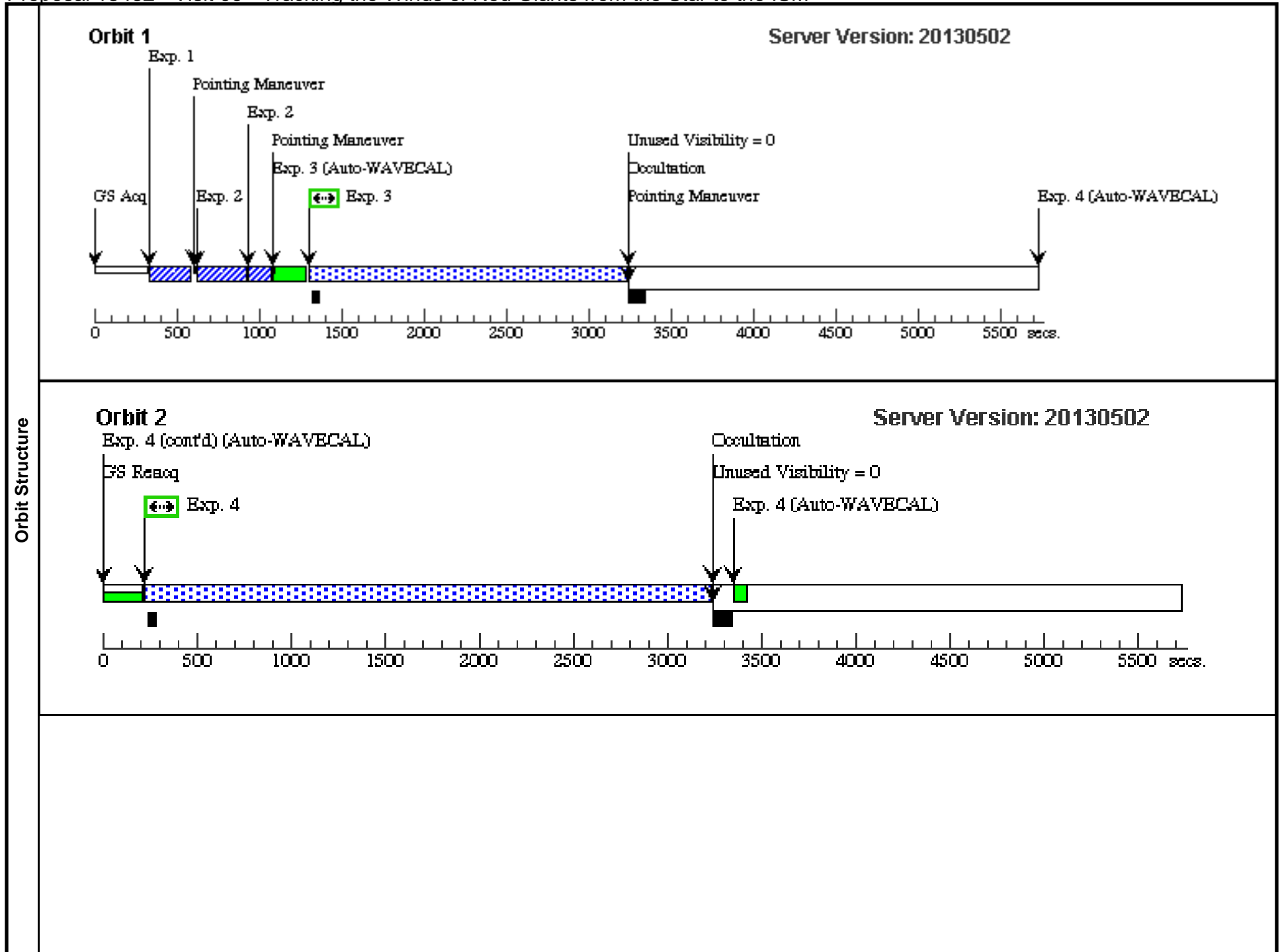
Server Version: 20130502



Proposal 13462 - Visit 09 - Tracking the Winds of Red Giants from the Star to the ISM

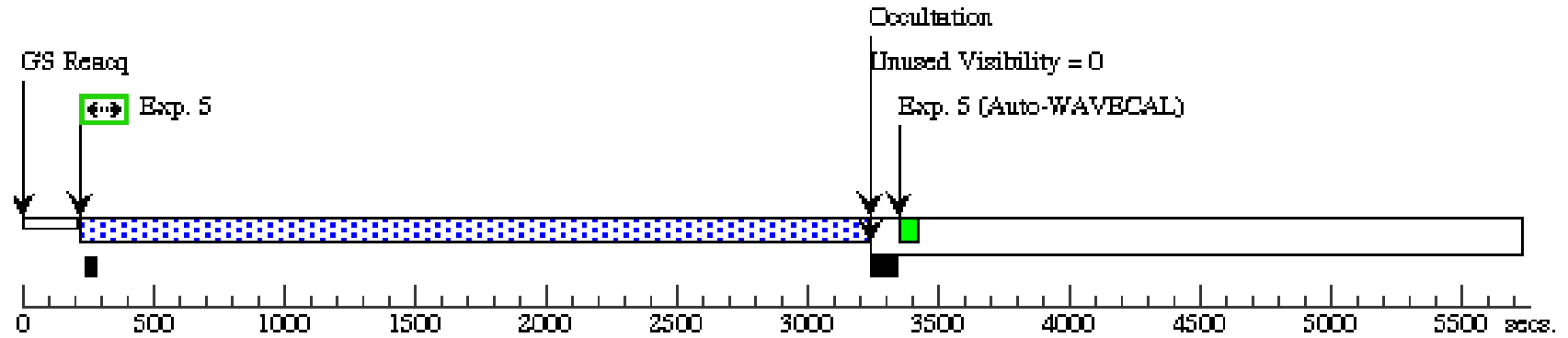
Tue Jun 11 06:22:45 GMT 2013

Visit	<b>Proposal 13462, Visit 09</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: STIS/CCD, STIS/FUV-MAMA, STIS/NUV-MAMA Special Requirements: (none)									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
		(9)	HD44478 Alt Name1: MU-GEM	RA: 06 22 57.6269 (95.7401121d) Dec: +22 30 48.90 (22.51358d) Equinox: J2000	Proper Motion RA: +56.39 mas/yr Proper Motion Dec: -110.03 mas/yr Parallax: 0.01408" Epoch of Position: 2000.0 Radial Velocity: +54.46 km/sec	V=2.914+/-0.01 TYPE=M3III, F-LINE(2796)=7.4E-12, W-LINE(2796)=0.4, F-LINE(1302)=1.6E-13, W-LINE(1302)=0.2	Reference Frame: ICRS			
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(507955)	(9) HD44478	STIS/CCD, ACQ, F28X50OII	MIRROR				0.1 Secs (0.1 Secs) [==>]	[1]
	2	(507956)	(9) HD44478	STIS/CCD, ACQ/PEAK, 0.3X0.05ND	MIRROR				0.1 Secs (0.1 Secs) [==>]	[1]
	3	(507969)	(9) HD44478	STIS/NUV-MAMA, ACCUM, 0.2X0.09	E230H 2713 A				1680.0 Secs (1914 Secs) [==>1914.0 Secs ]	[1]
	4	(507982)	(9) HD44478	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (2992 Secs) [==>2992.0 Secs ]	[2]
	5	(507982)	(9) HD44478	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (2992 Secs) [==>2992.0 Secs ]	[3]
	6	(507982)	(9) HD44478	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2700 Secs (2992 Secs) [==>2992.0 Secs ]	[4]



### Orbit 3

Server Version: 20130502



### Orbit 4

Server Version: 20130502

