14084 - Connecting Earth with its Galactic Environment: Probing Our Interstellar Past Along the Historical Solar Trajectory

Cycle: 23, Proposal Category: GO

(UV Initiative)

(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) GJ3323	STIS/CCD STIS/FUV-MAMA STIS/NUV-MAMA	3	24-Jul-2015 21:17:00.0	yes
02	(2) HD32147	STIS/CCD STIS/FUV-MAMA STIS/NUV-MAMA	3	24-Jul-2015 21:17:02.0	yes
03	(3) GJ3325	STIS/CCD STIS/NUV-MAMA	1	24-Jul-2015 21:17:04.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
04	(4) GJ190	STIS/CCD STIS/NUV-MAMA	1	24-Jul-2015 21:17:05.0	yes
05	(5) BD-11D916	STIS/CCD STIS/FUV-MAMA STIS/NUV-MAMA	3	24-Jul-2015 21:17:06.0	yes
06	(6) BD-09D956	STIS/CCD STIS/NUV-MAMA	1	24-Jul-2015 21:17:08.0	yes
07	(7) HD30523	STIS/CCD STIS/NUV-MAMA	1	24-Jul-2015 21:17:09.0	yes
08	(8) HD29980	STIS/CCD STIS/NUV-MAMA	1	24-Jul-2015 21:17:10.0	yes

14 Total Orbits Used

ABSTRACT

We propose to observe a sample of stars along the historical solar trajectory to probe the physical properties of our past interstellar environments. For more than 90 years there has been speculation surrounding the relationship between the interstellar medium, its influence on our heliosphere, and ultimately on variations in the atmosphere and even organism evolution here on Earth. By looking locally, at our most recent interstellar history, we can minimize many of the complications that have made establishing such a relationship difficult. The low column densities require high resolution spectroscopy of the strongest resonance lines, which are in the UV. This program will complement a ground-based survey that utilized the two strongest transitions in the optical, CaII and NaI, but was unable detect the lowest interstellar column densities within 100 pc. Therefore, this is necessarily a UV program and the strength of UV transitions will ensure detection of this material. The observations will be used to measure the number of clouds, their distances, densities, and velocities along this special line of sight. These measurements will be used to reconstruct the recent variations in heliospheric structure and Galactic cosmic ray flux as a result of passing through these clouds. Our observational results can be compared with existing geological tracers of cosmic rays. If these observations support a relationship between our past interstellar surroundings and the cosmic ray flux at 1 AU, it would have important implications for the history of the Earth's biosphere, as well as a new context to evaluate the interstellar environments of nearby stars with planetary systems.

OBSERVING DESCRIPTION

Target Selection and Availability: In order to probe the interstellar material along the solar historical trajectory, we propose observations of 8 stars within the historical solar path, out to a distance of ~50 pc. The historical solar path is defined by measurements by Dehnen & Binney (1998), and is in the direction of l = 207.7 deg and b = -32.4 deg. The targets are selected from within an observing cone that is defined as the region in which interstellar clouds have not had sufficient time to move out of the line of sight, or to have evolved, since the Sun was at that location. Hence, the observing cone increases dramatically near the Sun.

Desired Spectral Coverage: Each target will be observed at high spectral resolution using the E230H grating, which can simultaneously cover multiple FeII and MgII resonance lines with different oscillator strengths. For three targets, an additional E140M exposure is also requested to measure HI and DI absorption, in order to trace any depletion variations that may effect the FeII and MgII column density measurements.

Use of FeII and MgII absorption to measure ISM properties is motivated by a number of reasons: (1) These are two of the heaviest ions observed in the LISM and therefore have intrinsically narrow lines, which improves our ability to fully resolve the velocity structure of the interstellar clouds along the line of sight. (2) Both ions are expected to be the dominant ionization stage in these clouds for a wide range of temperatures (Slavin & Frisch 2002; Lehner et al. 2003). (3) All four resonance lines are available in one E230H STIS echelle setting. By simultaneously fitting multiple absorption lines, accurate measurements of a wide range of column densities are feasible, while minimizing the systematic errors involved in continuum placement, saturation, and line blending. (4) Stellar observations in the near-UV (NUV), 2200-2800 Angstroms, are very efficient, and only require 1 orbit each.

Alone, FeII and MgII absorption cannot provide the complete picture of the intervening ISM. When combined with observations of other ions, a whole host of fundamental physical measurements can be made for each cloud, including, depletions, ionization structure, temperature, and turbulent velocity. In particular, measuring the depletion of these ions onto dust grains is critical to estimating an accurate volume density. For this reason, three E140M exposures are requested to measure the interstellar HI (via DI) absorption. Various other ions, such as CII, NI, OI, SiII, SiIII, will also be observed (see Redfield & Linsky (2004a) for a full inventory LISM measurements of these ions within 100 pc).

Desired Spectral Resolution: The high spectral resolution of STIS is necessary to model the ISM absorption line profiles. Only by resolving the velocity components of the ISM clouds, can one measure accurate physical properties of these clouds. Hence, we propose to use the high resolution E230H grating to observe MgII and FeII. These ``heavy'' ions are not significantly broadened thermally, and provide sharp line profiles to resolve

the velocity structure
of the ISM along the line of sight. Because hydrogen and deuterium are thermally broadened, we are able to model their absorption with medium resolution spectra, and therefore, to maximize S/N, we plan to use the E140M setting. Due to the wide spectral range of the E140M grating of STIS, we will obtain practically the entire far-UV band from 1150-1700 Angstroms and
several ISM absorption lines (e.g., HI, DI, CII, NI, OI, SiII, SiIII).

Desired Aperture Size: All of the E230H observations will be taken through the 0.2x0.09 arcsecond slit, which requires a peak-up, to ensure the target is well centered. The E140M spectra will be observed through the 0.2x0.2 slit to maximize the S/N. Stars are significantly fainter in the FUV, and since we will already have a well-calibrated high resolution E230H spectra of the same sight line, we plan to use the larger slit to increase the signal.

Desired Signal-to-Noise and Exposure Times: Because cool star spectra are emission line sources in the UV, estimating expected S/N for our planned spectra requires first estimating Lyman-alpha and MgII fluxes, which we can do by extrapolating from previously observed stars. Chromospheric line fluxes (such as MgII and Lyman-alpha) are related to X-ray fluxes (Ayres et al. 1995). Wood et al. (2005) provide Lyman-alpha spectra for many stars and serve as our comparison sample. This also emphasizes the appeal of M star targets, which have high chromospheric activity levels and therefore strong emission lines with which to observe LISM absorption against. When L_X is not known, we estimate the flux from stars of similar spectral type scaled by V magnitude.

For each observation the preparation time is only 26 minutes: 6 minutes for the initial guide-star acquisition, 6 minutes for the target acquisition, 6 minutes for the target acquisition peak-up, and 8 minutes for the first spectroscopic MAMA exposure overhead. This typically leaves 24 minutes, more than enough time to get a E230H spectrum with a signal-to-noise (S/N) ratio >10 at the half-maximum (that is one half the FWHM from line center, because the ISM absorption is unlikely to centered at the same velocity as the star) of the strong MgII lines. Because multiple lines of the same ion are observed together, even a modest (S/N) ratio of 10 in one line is enough to make accurate measurements of weak column densities, even in blended profiles (demonstrated in Redfield & Linsky 2002). We have selected three sight lines that are most favorable for FUV observations to acquire the Lyman-alpha line to measure HI and DI column densities. After acquisition and overheads, we expect at least 37 minutes of exposure time to be available in the second orbit for the E140M exposure, and 44 minutes in subsequent orbits. In order to accurately model the Lyman-alpha profile, we require a S/N > 35 (see Wood et al. 2005), which is achievable in all cases, in just 2 additional orbits.

Brightness Limits: Most of our targets are late-type stars which have UV spectra characterized by weak continua, but strong emission lines. For this

reason, these targets fall far short of the global brightness limit. The emission lines also fall far short of the local brightness limit. The two emission lines of prime interest in this proposal (Lyman-alpha and MgII) are also the brightest, and therefore, the procedure given above for estimating the S/N near their peaks is also utilized to test for brightness limit violations.

None of the stars exceed brightness limits. Our brightest star, HD32147, has reliable IUE data, which provide accurate estimates of the S/N and count rates, which are more than an order of magnitude below the global and local count rates.

Visit

Proposal 14084, Visit 01 Sat Jul 25 01:17:11 GMT 2015

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/FUV-MAMA, STIS/NUV-MAMA

Special Requirements: BETWEEN 22-JUN-2015:00:00:00 AND 19-NOV-2015:00:00:00; BETWEEN 22-JUN-2016:00:00:00 AND 19-NOV-2016:00:00:00; BETWEEN 22-JUN-2017:00:00:00 AND 19-NOV-2017:00:00:00

Fixed Targets

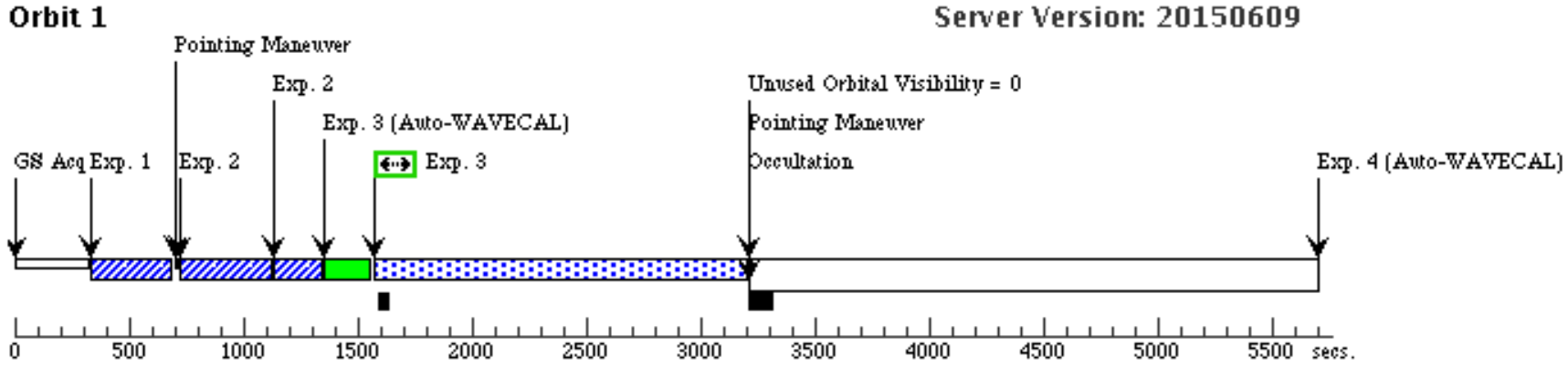
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	GJ3323	RA: 05 01 57.4690 (75.4894542d)	Proper Motion RA: -0.03693 sec of time/yr	V=12.20	Reference Frame: ICRS
	Alt Name1: LHS1723	Dec: -06 56 45.92 (-6.94609d)	Proper Motion Dec: -0.533 arcsec/yr	TYPE=M4V,	
		Equinox: J2000	Parallax: 0.18792"	B-V=1.72,	
			Epoch of Position: 2000.0	E(B-V)=0,	
			Radial Velocity: 39.4 km/sec	F-LINE(2796)=0.98e-12,	
				W-LINE(2796)=0.35,	
				F-LINE(1215)=3.48e-12,	
				W-LINE(1215)=0.6	

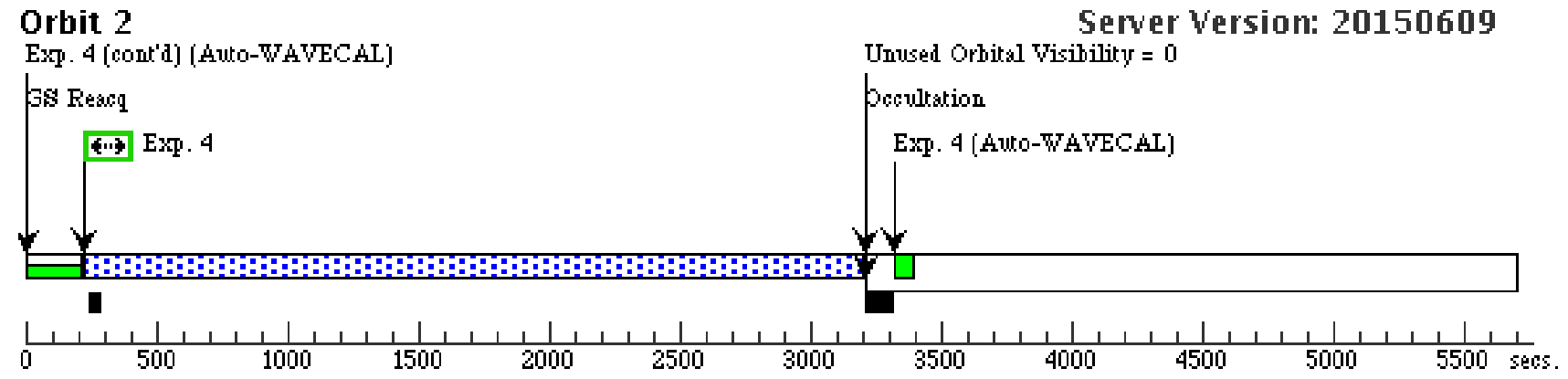
Comments: No target star was identified by the BOT in the observed field. DSS images clearly indicate a bright isolated target star (brightest within 100 arcsec). Clearly the target star is the dominant object in the field of view.
Extended=NO

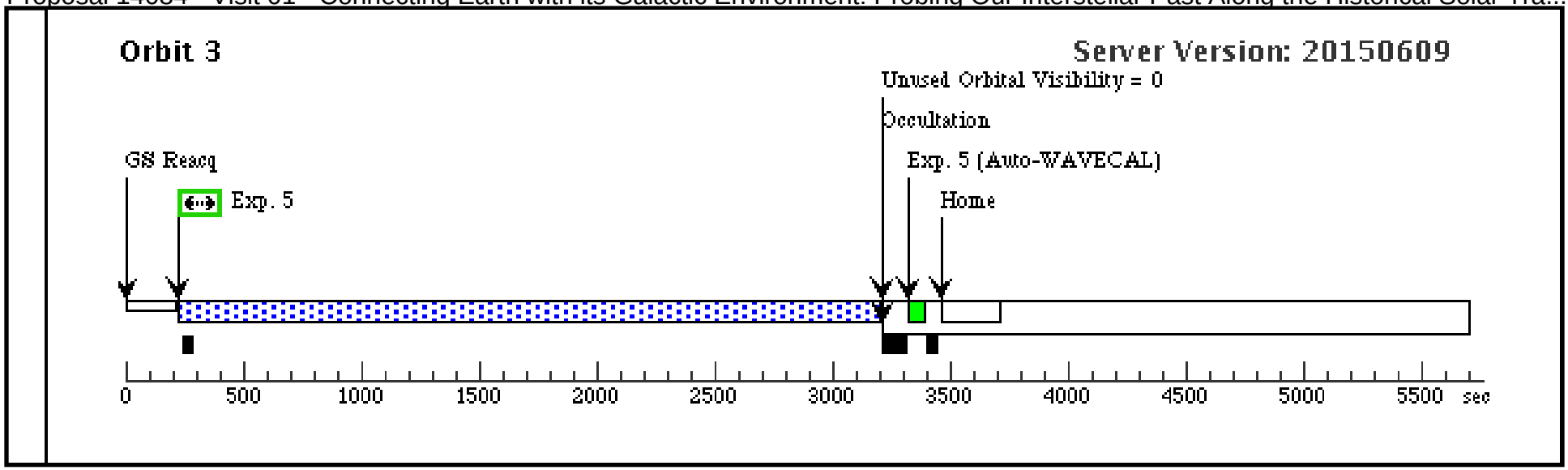
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.732873)	(1) GJ3323	STIS/CCD, ACQ, F25ND3	MIRROR	ACQTYPE=POINT			15.4 Secs (15.4 Secs)	
								[==>]	***[1]***
	Comments: SNR = 150.4102 *Brightest Pixel = 7,047.32 e*								
2	(STIS.sp.732919)	(1) GJ3323	STIS/CCD, ACQ/PEAK, 0.2X0.09	G430L 4300 A				10.5 Secs (10.5 Secs)	
								[==>]	***[1]***
	Comments: SNR = 16.0613 *Brightest Pixel = 227.62 e* *Global Source Counts = 400,190.615 e*								
3	(STIS.sp.733598)	(1) GJ3323	STIS/NUV-MAMA, ACCUM, 0.2X0.09	E230H 2713 A				1613 Secs (1613 Secs)	
								[==>]	***[1]***
	Comments: SNR = 30.3158 *Brightest Pixel = 361.09 e*								
4	(STIS.sp.733649)	(1) GJ3323	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2961 Secs (2961 Secs)	
								[==>]	***[2]***
	Comments: SNR = 26.5645 *Brightest Pixel = 361.32 e*								
5	(STIS.sp.733649)	(1) GJ3323	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2961 Secs (2961 Secs)	
								[==>]	***[3]***
	Comments: SNR = 26.5645 *Brightest Pixel = 361.32 e*								

Orbit Structure



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Visit

Proposal 14084, Visit 02 Sat Jul 25 01:17:12 GMT 2015

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/FUV-MAMA, STIS/NUV-MAMA

Special Requirements: BETWEEN 22-JUN-2015:00:00:00 AND 19-NOV-2015:00:00:00; BETWEEN 22-JUN-2016:00:00:00 AND 19-NOV-2016:00:00:00; BETWEEN 22-JUN-2017:00:00:00 AND 19-NOV-2017:00:00:00

Fixed Targets

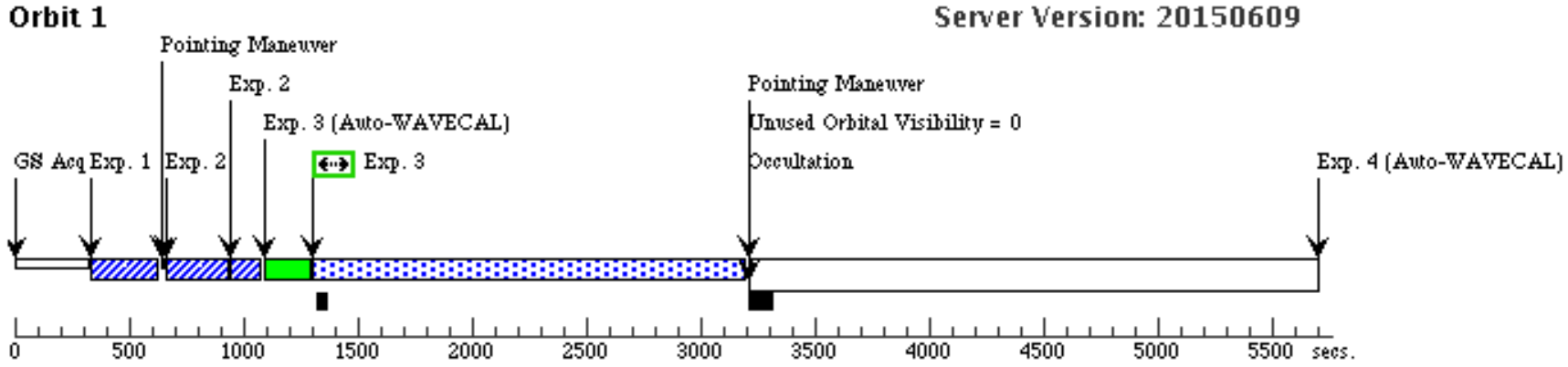
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	HD32147 Alt Name1: GJ183 Alt Name2: HR1614	RA: 05 00 48.6800 (75.2028333d) Dec: -05 45 3.50 (-5.75097d) Equinox: J2000	Proper Motion RA: +0.036859 sec of time/yr Proper Motion Dec: -1.10923 arcsec/yr Parallax: 0.11484" Epoch of Position: 1991.25 Radial Velocity: 21.7 km/sec	V=6.21+/-0.05 TYPE=K3V, B-V=1.06, E(B-V)=0, F-LINE(2796)=5.64e-12, W-LINE(2796)=0.5, F-LINE(1215)=2.94e-12, W-LINE(1215)=0.65	Reference Frame: ICRS

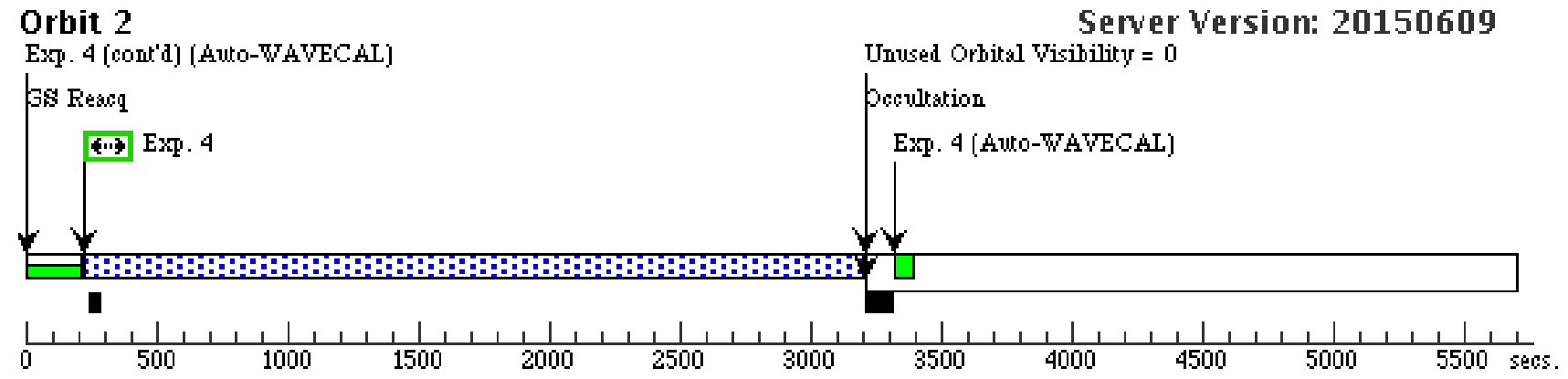
Comments: IUE SPECTRUM: SWP16520, LWR11179
No target star was identified by the BOT in the observed field. DSS images clearly indicate a bright isolated target star (brightest within 100 arcsec). Clearly the target star is the dominant object in the field of view. Extended=NO

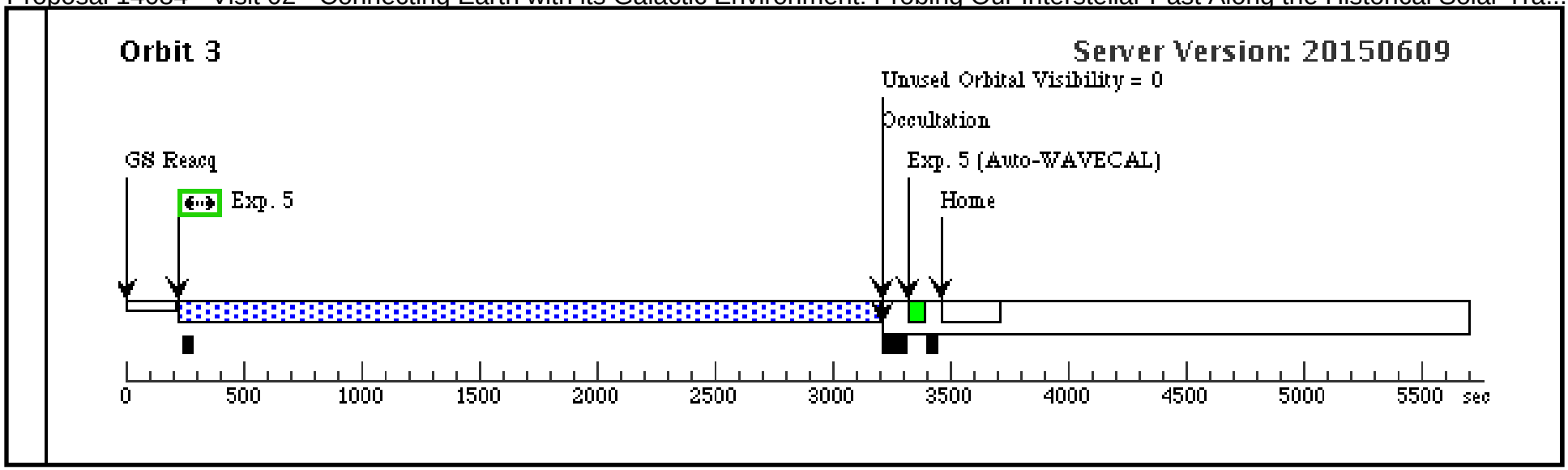
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.732894)	(2) HD32147	STIS/CCD, ACQ, F25ND3	MIRROR	ACQTYPE=POINT			0.3 Secs (0.3 Secs) *[==>]*	 ***[1]***
	Comments: SNR = 173.6203 *Brightest Pixel = 11,990.92 e*								
2	(STIS.sp.732961)	(2) HD32147	STIS/CCD, ACQ/PEAK, 0.2X0.09	G430L 4300 A				0.2 Secs (0.2 Secs) *[==>]*	 ***[1]***
	Comments: SNR = 75.7500 *Brightest Pixel = 913.11 e* *Global Source Counts = 2,603,953.289 e*								
3	(STIS.sp.733629)	(2) HD32147	STIS/NUV-MAMA, ACCUM, 0.2X0.09	E230H 2713 A				1879 Secs (1879 Secs) *[==>]*	 ***[1]***
	Comments: SNR = 68.0688 *Brightest Pixel = 1,725.97 e*								
4	(STIS.sp.733668)	(2) HD32147	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2961 Secs (2961 Secs) *[==>]*	 ***[2]***
	Comments: Using IUE Spectra: STIS.sp.733668 *SNR = 59.7269* *Brightest Pixel = 1,034.96 e* *Using Stellar Model Spectra: STIS.sp.733664* *SNR = 26.0022* *Brightest Pixel = 315.92 e*								
5	(STIS.sp.733668)	(2) HD32147	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2961 Secs (2961 Secs) *[==>]*	 ***[3]***
	Comments: Using IUE Spectra: STIS.sp.733668 *SNR = 59.7269* *Brightest Pixel = 1,034.96 e* *Using Stellar Model Spectra: STIS.sp.733664* *SNR = 26.0022* *Brightest Pixel = 315.92 e*								

Orbit Structure



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Visit

Proposal 14084, Visit 03 Sat Jul 25 01:17:12 GMT 2015

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/NUV-MAMA

Special Requirements: (none)

Fixed Targets

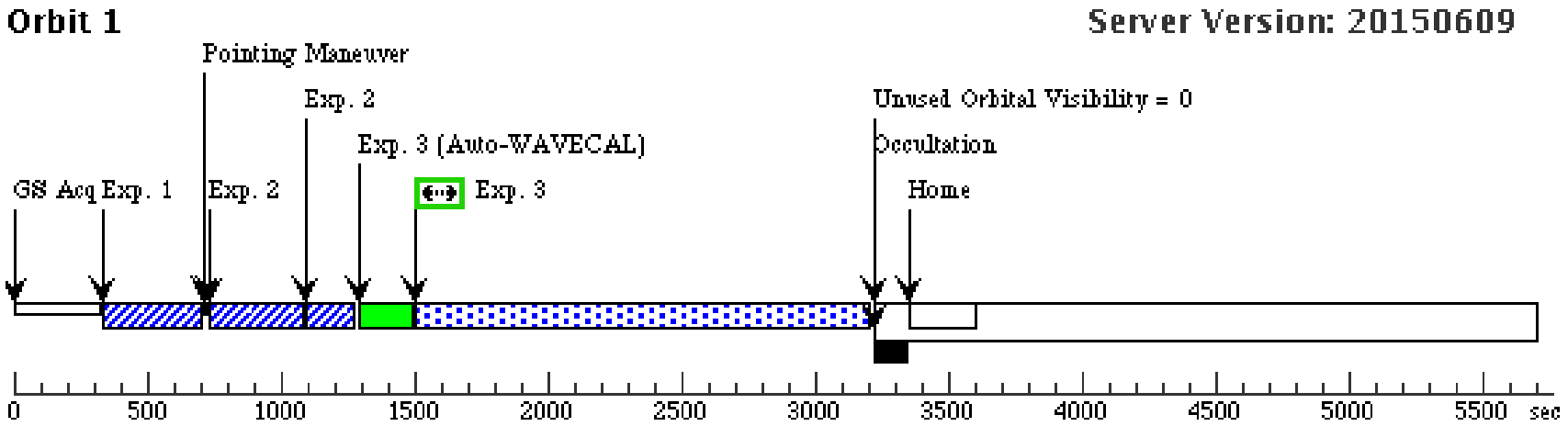
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	GJ3325	RA: 05 03 20.2200 (75.8342500d)	Proper Motion RA: -0.0158227 sec of time/yr	V=11.74	Reference Frame: ICRS
	Alt Name1: LHS1731	Dec: -17 22 20.80 (-17.37244d)	Proper Motion Dec: -0.44719 arcsec/yr	TYPE=M3V,	
	Alt Name2: HIP23512	Equinox: J2000	Parallax: 0.10861"	B-V=1.64,	
			Epoch of Position: 1991.25	E(B-V)=0,	
			Radial Velocity: 15.34 km/sec	F-LINE(2796)=0.35e-12,	
				W-LINE(2796)=0.35	

Comments: No target star was identified by the BOT in the observed field. DSS images clearly indicate a bright isolated target star (brightest within 100 arcsec). Clearly the target star is the dominant object in the field of view.
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.732 881)	(3) GJ3325	STIS/CCD, ACQ, F25ND3	MIRROR	ACQTYPE=POINT			18.6 Secs (18.6 Secs)	
								[==>]	***[1]***
	Comments: SNR = 150.3716 *Brightest Pixel = 7,762.10 e*								
2	(STIS.sp.73 2931)	(3) GJ3325	STIS/CCD, ACQ/PEAK, 0.2X0.09	G430L 4300 A				6.7 Secs (6.7 Secs)	
								[==>]	***[1]***
	Comments: SNR = 18.6840 *Brightest Pixel = 197.54 e* *Global Source Counts = 405,576.268 e*								
3	(STIS.sp.73 3605)	(3) GJ3325	STIS/NUV-MAMA, ACCUM, 0.2X0.09	E230H 2713 A				1683 Secs (1683 Secs)	
								[==>]	***[1]***
	Comments: SNR = 17.9845 *Brightest Pixel = 136.18 e*								

Orbit Structure



Visit

Proposal 14084, Visit 04 Sat Jul 25 01:17:12 GMT 2015

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/NUV-MAMA

Special Requirements: (none)

Fixed Targets

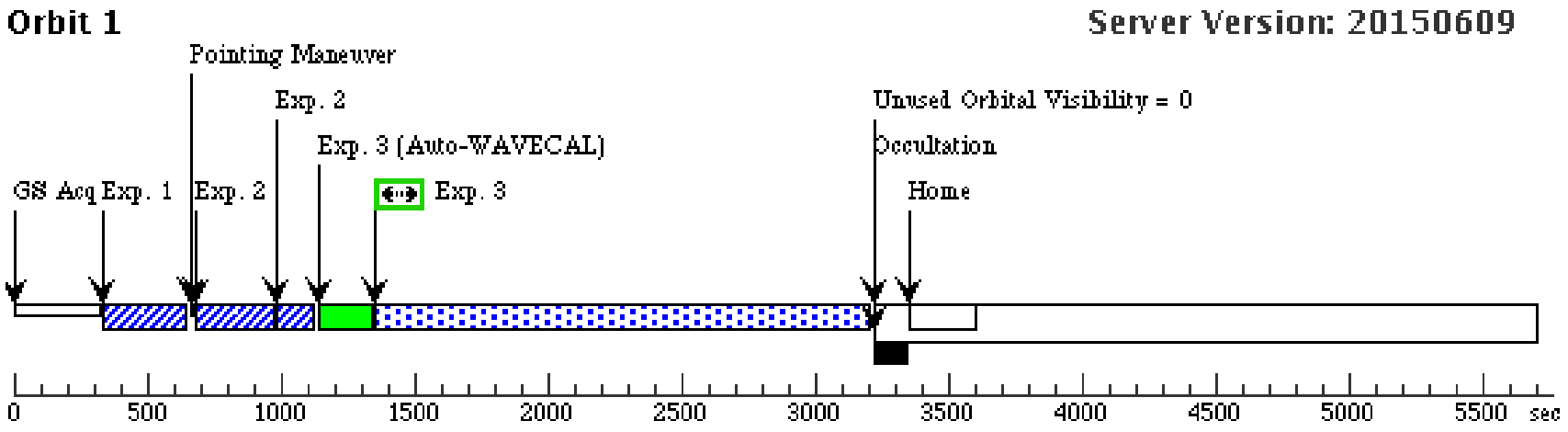
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	GJ190	RA: 05 08 34.7400 (77.1447500d)	Proper Motion RA: +0.035292 sec of time/yr	V=10.30+/-0.02	Reference Frame: ICRS
	Alt Name1: LHS203	Dec: -18 10 7.10 (-18.16864d)	Proper Motion Dec: -1.39976 arcsec/yr	TYPE=M3V,	
	Alt Name2: HIP23932	Equinox: J2000	Parallax: 0.10785"	B-V=1.51,	
			Epoch of Position: 1991.25	E(B-V)=0,	
			Radial Velocity: 33.9 km/sec	F-LINE(2796)=0.26e-12,	
				W-LINE(2796)=0.35	

Comments: No target star was identified by the BOT in the observed field. DSS images clearly indicate a bright isolated target star (brightest within 100 arcsec). Clearly the target star is the dominant object in the field of view.
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.732884)	(4) GJ190	STIS/CCD, ACQ, F25ND3	MIRROR	ACQTYPE=POINT			5.0 Secs (5 Secs)	
								[==>]	***[1]***
	Comments: SNR = 151.3525 *Brightest Pixel = 7,859.98 e*								
2	(STIS.sp.732938)	(4) GJ190	STIS/CCD, ACQ/PEAK, 0.2X0.09	G430L 4300 A				1.8 Secs (1.8 Secs)	
								[==>]	***[1]***
	Comments: SNR = 18.8667 *Brightest Pixel = 199.88 e* *Global Source Counts = 410,459.429 e*								
3	(STIS.sp.733606)	(4) GJ190	STIS/NUV-MAMA, ACCUM, 0.2X0.09	E230H 2713 A				1836 Secs (1836 Secs)	
								[==>]	***[1]***
	Comments: SNR = 15.9530 *Brightest Pixel = 111.07 e*								

Orbit Structure



Visit

Proposal 14084, Visit 05 Sat Jul 25 01:17:12 GMT 2015

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/FUV-MAMA, STIS/NUV-MAMA

Special Requirements: BETWEEN 13-JUN-2015:00:00:00 AND 13-NOV-2015:00:00:00; BETWEEN 13-JUN-2016:00:00:00 AND 13-NOV-2016:00:00:00; BETWEEN 13-JUN-2017:00:00:00 AND 13-NOV-2017:00:00:00

Fixed Targets

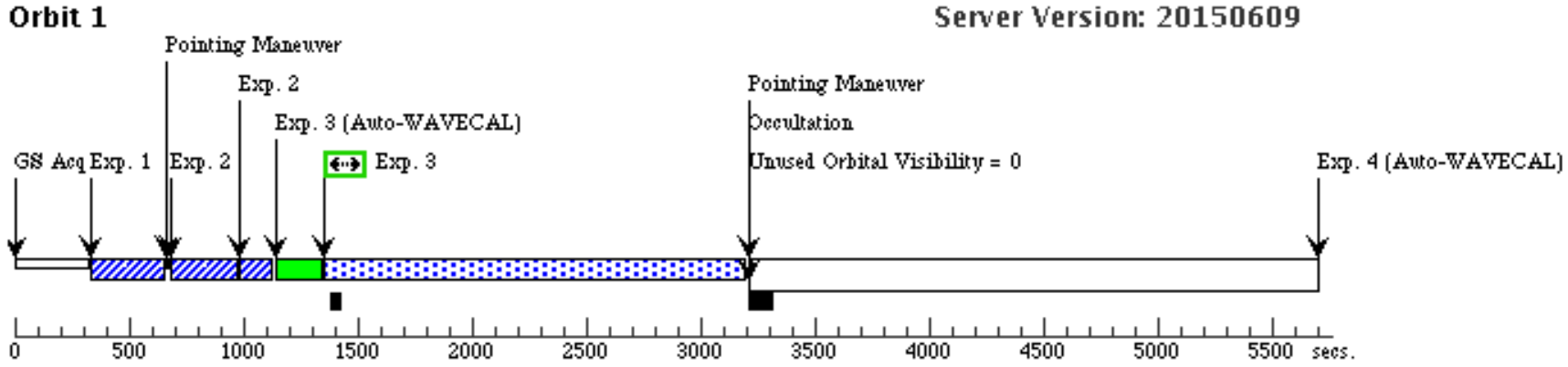
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(5)	BD-11D916	RA: 04 37 42.0000 (69.4250000d)	Proper Motion RA: -0.015334 sec of time/yr	V=10.33+/-0.01	Reference Frame: ICRS
	Alt Name1: GJ173	Dec: -11 02 18.30 (-11.03842d)	Proper Motion Dec: -0.19257 arcsec/yr	TYPE=M1V,	
	Alt Name2: HIP21556	Equinox: J2000	Parallax: 0.09010"	B-V=1.51,	
			Epoch of Position: 1991.25	E(B-V)=0,	
			Radial Velocity: -6.8 km/sec	F-LINE(2796)=0.89e-12,	
				W-LINE(2796)=0.35,	
				F-LINE(1215)=2.17e-12,	
				W-LINE(1215)=0.6	

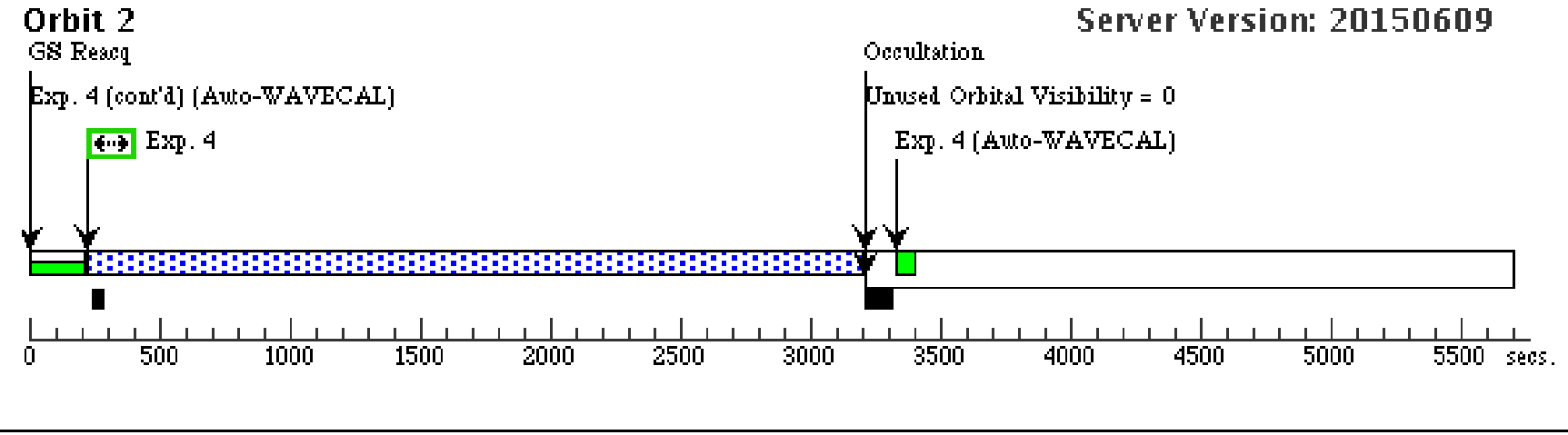
Comments: Target star was identified by the BOT in the observed field. DSS images clearly indicate a bright isolated target star (brightest within 100 arcsec). Clearly the target star is the dominant object in the field of view.
Extended=NO

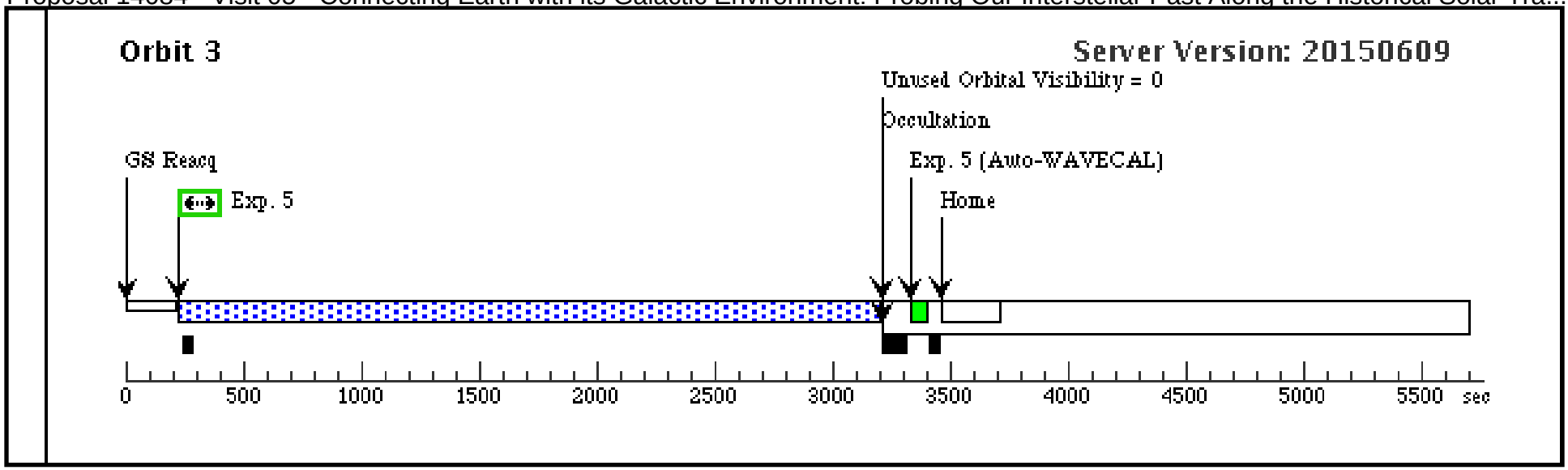
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.732886)	(5) BD-11D916	STIS/CCD, ACQ, F25ND3	MIRROR	ACQTYPE=POINT			6.4 Secs (6.4 Secs)	
								[==>]	***[1]***
	Comments: SNR = 150.9974 *Brightest Pixel = 8,204.82 e*								
2	(STIS.sp.732943)	(5) BD-11D916	STIS/CCD, ACQ/PEAK, 0.2X0.09	G430L 4300 A				1.8 Secs (1.8 Secs)	
								[==>]	***[1]***
	Comments: SNR = 19.3886 *Brightest Pixel = 197.95 e* *Global Source Counts = 420,754.530 e*								
3	(STIS.sp.733612)	(5) BD-11D916	STIS/NUV-MAMA, ACCUM, 0.2X0.09	E230H 2713 A				1829 Secs (1829 Secs)	
								[==>]	***[1]***
	Comments: SNR = 30.7134 *Brightest Pixel = 372.10 e*								
4	(STIS.sp.733650)	(5) BD-11D916	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2966 Secs (2966 Secs)	
								[==>]	***[2]***
	Comments: SNR = 20.9679 *Brightest Pixel = 225.86 e*								
5	(STIS.sp.733650)	(5) BD-11D916	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2966 Secs (2966 Secs)	
								[==>]	***[3]***
	Comments: SNR = 20.9679 *Brightest Pixel = 225.86 e*								

Orbit Structure






Orbit 3
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Occultation
GS Reacq
Exp. 5
Exp. 5 (Auto-WAVECAL)
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 14084, Visit 06 Sat Jul 25 01:17:12 GMT 2015

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/NUV-MAMA

Special Requirements: (none)

Fixed Targets

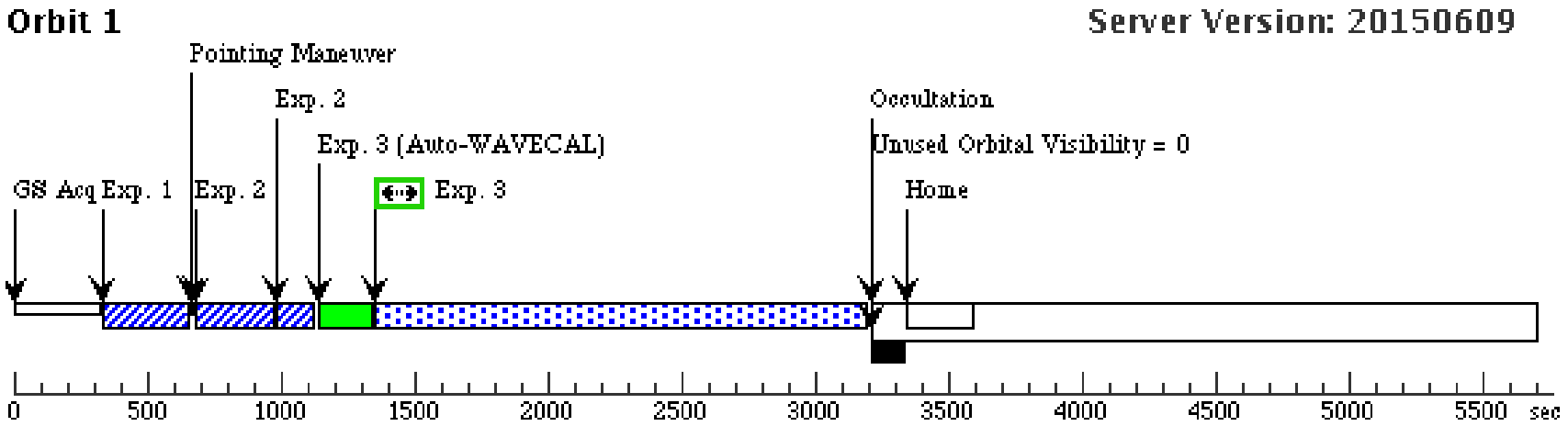
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(6)	BD-09D956 Alt Name1: HIP21765	RA: 04 40 29.3300 (70.1222083d) Dec: -09 11 45.00 (-9.19583d) Equinox: J2000	Proper Motion RA: -0.0074427 sec of time/yr Proper Motion Dec: -0.11160 arcsec/yr Parallax: 0.05080" Epoch of Position: 1991.25	V=10.26+/-0.01 TYPE=M0V, B-V=1.48, E(B-V)=0, F-LINE(2796)=0.27e-12, W-LINE(2796)=0.35	Reference Frame: ICRS

Comments: Target star was identified by the BOT in the observed field. DSS images clearly indicate a bright isolated target star (brightest within 100 arcsec). Clearly the target star is the dominant object in the field of view.
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.732 889)	(6) BD-09D956	STIS/CCD, ACQ, F25ND3	MIRROR	ACQTYPE=POINT			6.0 Secs (6 Secs) *[==>]*	*[1]*
	Comments: SNR = 150.9925 *Brightest Pixel = 8,204.27 e*								
2	(STIS.sp.73 2950)	(6) BD-09D956	STIS/CCD, ACQ/PEAK, 0.2X0.09	G430L 4300 A				1.7 Secs (1.7 Secs) *[==>]*	*[1]*
	Comments: SNR = 19.4995 *Brightest Pixel = 199.40 e* *Global Source Counts = 423,843.197 e*								
3	(STIS.sp.73 3615)	(6) BD-09D956	STIS/NUV-MAMA, ACCUM, 0.2X0.09	E230H 2713 A				1825 Secs (1825 Secs) *[==>]*	*[1]*
	Comments: SNR = 16.2426 *Brightest Pixel = 114.55 e*								

Orbit Structure



Visit

Proposal 14084, Visit 07 Sat Jul 25 01:17:12 GMT 2015

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/NUV-MAMA

Special Requirements: (none)

Fixed Targets

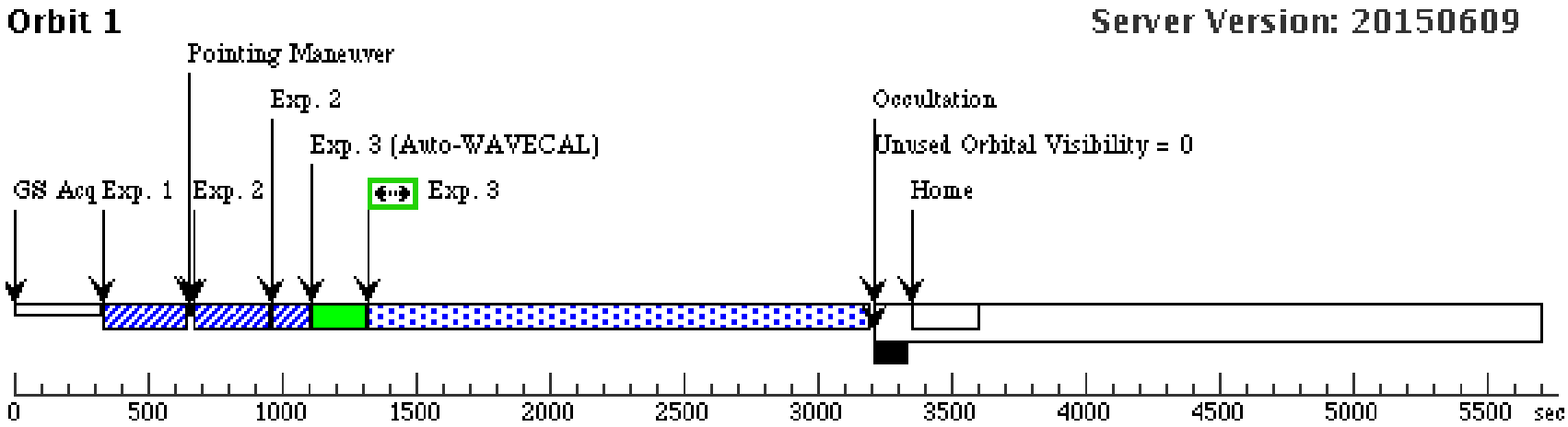
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(7)	HD30523	RA: 04 48 1.0900 (72.0045417d)	Proper Motion RA: +0.00563 sec of time/yr	V=9.43+/-0.10	Reference Frame: ICRS
	Alt Name1: GJ3314	Dec: -10 56 0.20 (-10.93339d)	Proper Motion Dec: -0.10910 arcsec/yr	TYPE=K5V,	
	Alt Name2: HIP22288	Equinox: J2000	Parallax: 0.03863"	B-V=1.23,	
			Epoch of Position: 1991.25	E(B-V)=0,	
			Radial Velocity: 27.3 km/sec	F-LINE(2796)=0.30e-12,	
				W-LINE(2796)=0.5	

Comments: Target star was identified by the BOT in the observed field. DSS images clearly indicate a bright isolated target star (brightest within 100 arcsec). Clearly the target star is the dominant object in the field of view.
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.732892)	(7) HD30523	STIS/CCD, ACQ, F25ND3	MIRROR	ACQTYPE=POINT			3.5 Secs (3.5 Secs)	
								[==>]	***[1]***
	Comments: SNR = 150.4547 *Brightest Pixel = 8,587.85 e*								
2	(STIS.sp.732955)	(7) HD30523	STIS/CCD, ACQ/PEAK, 0.2X0.09	G430L 4300 A				0.8 Secs (0.8 Secs)	
								[==>]	***[1]***
	Comments: SNR = 22.4044 *Brightest Pixel = 198.72 e* *Global Source Counts = 452,271.665 e*								
3	(STIS.sp.733619)	(7) HD30523	STIS/NUV-MAMA, ACCUM, 0.2X0.09	E230H 2713 A				1859 Secs (1859 Secs)	
								[==>]	***[1]***
	Comments: SNR = 14.4657 *Brightest Pixel = 92.52 e*								

Orbit Structure



Visit

Proposal 14084, Visit 08 Sat Jul 25 01:17:12 GMT 2015

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/NUV-MAMA

Special Requirements: (none)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(8)	HD29980	RA: 04 43 16.3800 (70.8182500d)	Proper Motion RA: +0.003613 sec of time/yr	V=8.06	Reference Frame: ICRS
	Alt Name1: HIP21963	Dec: -09 37 5.60 (-9.61822d)	Proper Motion Dec: +0.04277 arcsec/yr	TYPE=G5V,	
		Equinox: J2000	Parallax: 0.01823"	B-V=0.63,	
			Epoch of Position: 1991.25	E(B-V)=0,	
			Radial Velocity: 32.2 km/sec	F-LINE(2796)=0.88e-12,	
				W-LINE(2796)=0.6	

Comments: Target star was identified by the BOT in the observed field. DSS images clearly indicate a bright isolated target star (brightest within 100 arcsec). Clearly the target star is the dominant object in the field of view.
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.732 896)	(8) HD29980	STIS/CCD, ACQ, F25ND3	MIRROR	ACQTYPE=POINT			1.4 Secs (1.4 Secs)	
								[==>]	***[1]***
	Comments: SNR = 150.5884 *Brightest Pixel = 9,434.42 e*								
2	(STIS.sp.73 2965)	(8) HD29980	STIS/CCD, ACQ/PEAK, 0.2X0.09	G430L 4300 A				0.2 Secs (0.2 Secs)	
								[==>]	***[1]***
	Comments: SNR = 29.0649 *Brightest Pixel = 170.62 e* *Global Source Counts = 547,985.194 e*								
3	(STIS.sp.73 3632)	(8) HD29980	STIS/NUV-MAMA, ACCUM, 0.2X0.09	E230H 2713 A				1875 Secs (1875 Secs)	
								[==>]	***[1]***
	Comments: SNR = 25.6222 *Brightest Pixel = 242.49 e*								

Orbit Structure