13820 - Search for an evaporating ocean on the super-Earth HD 97658b

Cycle: 22, Proposal Category: GO

(UV Initiative)

(Availability Mode: AVAILABLE)

INVESTIGATORS

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Dr. Peter J. Wheatley (CoI) (ESA Member)	The University of Warwick	p.j.wheatley@warwick.ac.uk

VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) HD-97658 WAVE	STIS/CCD STIS/FUV-MAMA	5	17-Dec-2015 21:06:58.0	yes
02	(1) HD-97658 WAVE	STIS/CCD STIS/FUV-MAMA	5	17-Dec-2015 21:07:02.0	yes
04	(1) HD-97658 WAVE	STIS/CCD STIS/FUV-MAMA	5	17-Dec-2015 21:07:06.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
03	(1) HD-97658 WAVE	STIS/CCD STIS/FUV-MAMA	5	17-Dec-2015 21:07:10.0	yes

20 Total Orbits Used

ABSTRACT

The HD 97658b super-Earth was recently detected in transit across one of the brightest star (V=7.7) known to host a transiting planet. The density of the planet suggests it must contain a large mass fraction of water. Although the water vapor has not been detected in the lower atmosphere by HST/WFC3 due to the small atmospheric scale height, the moderate orbital distance of this warm (700-1000 K) planet favors the atmospheric escape of this water, which should be promptly dissociated at high altitude and become observable as hydrogen flowing within and beyond the Roche lobe. The parent star properties are similar to those of HD 189733 (K dwarf, V=7.8, d=20 pc) and numerical simulations show that the halo of atomic hydrogen resulting from the dissociation of water is observable with HST/STIS at Lyman-alpha (121 nm). The detection of this atomic hydrogen will be the first signature of an evolved evaporating ocean on an extrasolar planet, as well as the first validation of internal structure models of exoplanets in this mass regime. A non-detection of escaping hydrogen, as in the case of 55 Cnc e, would also bring useful constraints on the nature of the planetary atmosphere (CO2-rich vs. H2O-rich?), the fate of super-Earths, and the progenitors of the rocky evaporation remnants detected by CoRoT and Kepler.

OBSERVING DESCRIPTION

This program consists in 3 visits of 5 HST orbits. In each visit, we will observe the transit of an exoplanet (HD 97658b) in front of its host star. Transits occur every 9.49 days (the orbital period of the planet) and last for 2.8 hours. The timing requirements are set as phase constraints on the first ACQ exposure of the first orbit in a visit. The goal is to observe the star during two HST orbits before the transit, one or two HST orbits during the transit, and one or two HST orbits after the transit. The phase constraints are slightly different from visits #1 and #3 than from visit #2 to enable a coverage of the transit as full as possible (with respect to Earth occultations). The allowed start phase range is ~13 min.

Visit

Proposal 13820, Visit 01, completed Fri Dec 18 02:07:11 GMT 2015

Diagnostic Status: Warning

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

Special Requirements: SCHED 100%; Period 9.4903 D AND ZERO-PHASE HJD2456523.12540

Diagnostics

(Visit 01) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Visit 01) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Visit 01) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Visit 01) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Visit 01) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

Fixed Targets

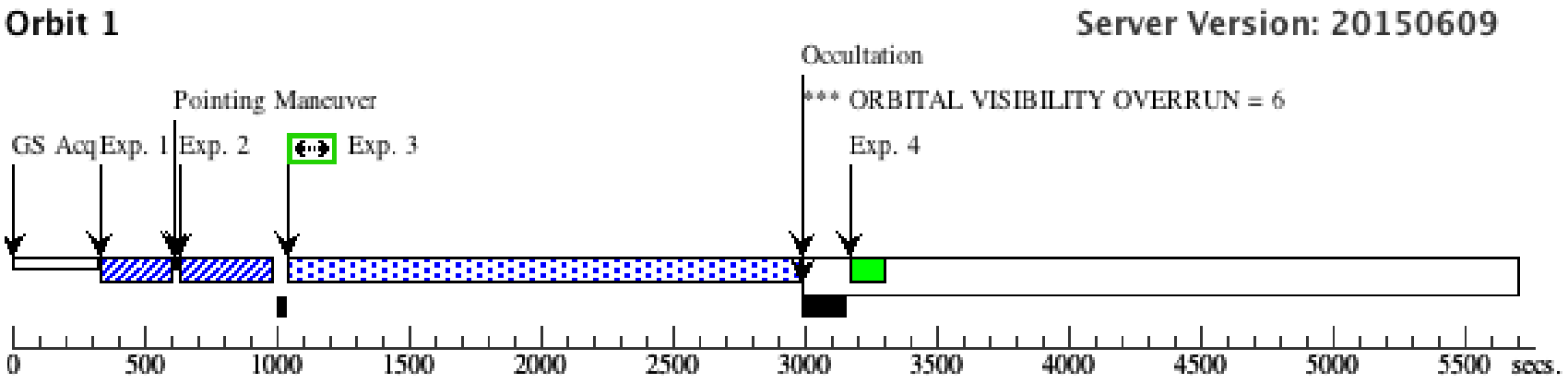
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HD-97658	RA: 11 14 33.1604 (168.6381683d)	Proper Motion RA: -106.48 mas/yr	V=7.714	Reference Frame: ICRS
	Alt Name1: HIP54906	Dec: +25 42 37.40 (25.71039d)	Proper Motion Dec: 48.82 mas/yr	U=9.049,	
	Alt Name2: GSC01981-01168	Equinox: J2000	Parallax: 0.004736"	B=8.569	
			Epoch of Position: 2000		
			Radial Velocity: -1.89 km/sec		

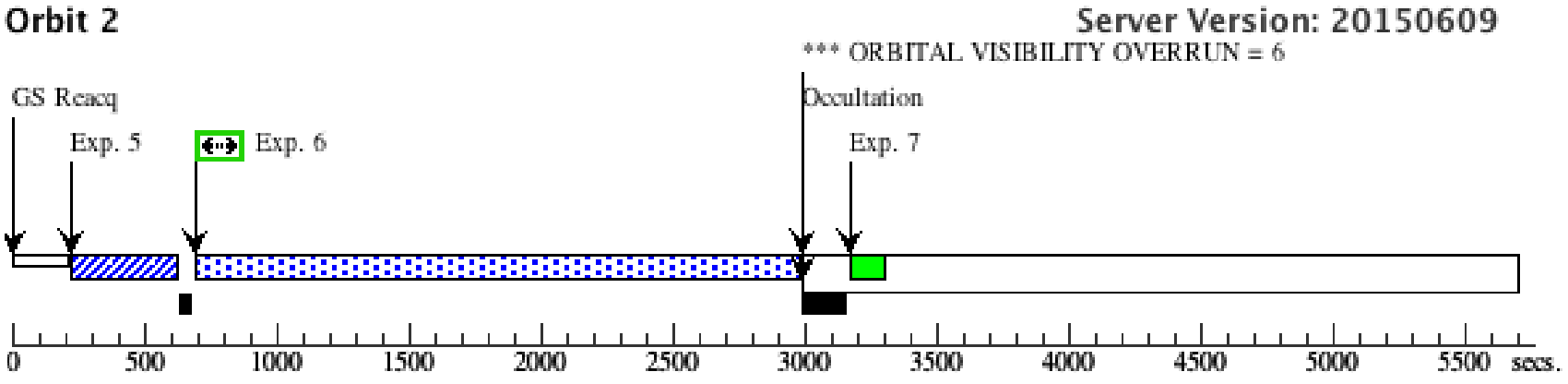
Comments: The J=2000 coordinates are from the GSC 2.3 (hstID: N6O1000085).
The uncertainties on coordinates, proper motions, and annual parallax comes from SIMBAD. The star has Hipparcos astrometric coordinates (HIP 54906).

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ	(1) HD-97658	STIS/CCD, ACQ, F28X50OII	MIRROR		PHASE 0.979 TO 0.992	Sequence 1-4 Non-Int in Visit 01	2 Secs (2 Secs) *[==>]*	*[1]*
2	ACQ/PEAK	(1) HD-97658	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 1-4 Non-Int in Visit 01	1 Secs (1 Secs) *[==>]*	*[1]*
3	SCI (STIS.sp.415446)	(1) HD-97658	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=5000; WAVECAL=NO		Sequence 1-4 Non-Int in Visit 01	1796 Secs (1796 Secs) *[==>]*	*[1]*
	Comments: The ETC run # refers to a previous run performed for a nearly identical programme with the target star HD 189733, which is a close twin of HD 97658b: same V magnitude, same stellar distance, and same spectral type. Hence, we expect a very similar Lyman-alpha emission profile. Previous STIS/G140M spectrum of HD 189733 has been used as input to the ETC (user uploaded spectrum). We are basically photon-starved and set the exposure time to the maximum possible value.								
4	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 1-4 Non-Int in Visit 01	*[==>]*	*[1]*
5	ACQ/PEAK	(1) HD-97658	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 5-7 Non-Int in Visit 01	1 Secs (1 Secs) *[==>]*	*[2]*
6	SCI (STIS.sp.415446)	(1) HD-97658	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=5000		Sequence 5-7 Non-Int in Visit 01	2153 Secs (2153 Secs) *[==>]*	*[2]*
7	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 5-7 Non-Int in Visit 01	*[==>]*	*[2]*
8	ACQ/PEAK	(1) HD-97658	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 8-10 Non-Int in Visit 01	1 Secs (1 Secs) *[==>]*	*[3]*
9	SCI (STIS.sp.415446)	(1) HD-97658	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=5000		Sequence 8-10 Non-Int in Visit 01	2153 Secs (2153 Secs) *[==>]*	*[3]*
10	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 8-10 Non-Int in Visit 01	*[==>]*	*[3]*
11	ACQ/PEAK	(1) HD-97658	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 11-13 Non-Int in Visit 01	1 Secs (1 Secs) *[==>]*	*[4]*
12	SCI (STIS.sp.415446)	(1) HD-97658	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=5000		Sequence 11-13 Non-Int in Visit 01	2153 Secs (2153 Secs) *[==>]*	*[4]*
13	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 11-13 Non-Int in Visit 01	*[==>]*	*[4]*
14	ACQ/PEAK	(1) HD-97658	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 14-16 Non-Int in Visit 01	1 Secs (1 Secs) *[==>]*	*[5]*
15	SCI (STIS.sp.415446)	(1) HD-97658	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=5000		Sequence 14-16 Non-Int in Visit 01	2153 Secs (2153 Secs) *[==>]*	*[5]*
16	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 14-16 Non-Int in Visit 01	*[==>]*	*[5]*

Orbit Structure





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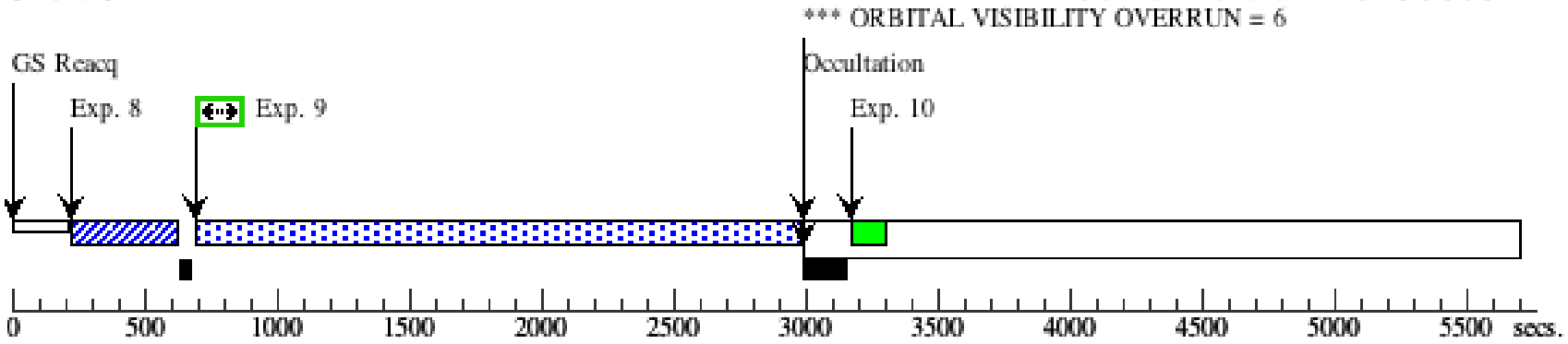
Server Version: 20150609



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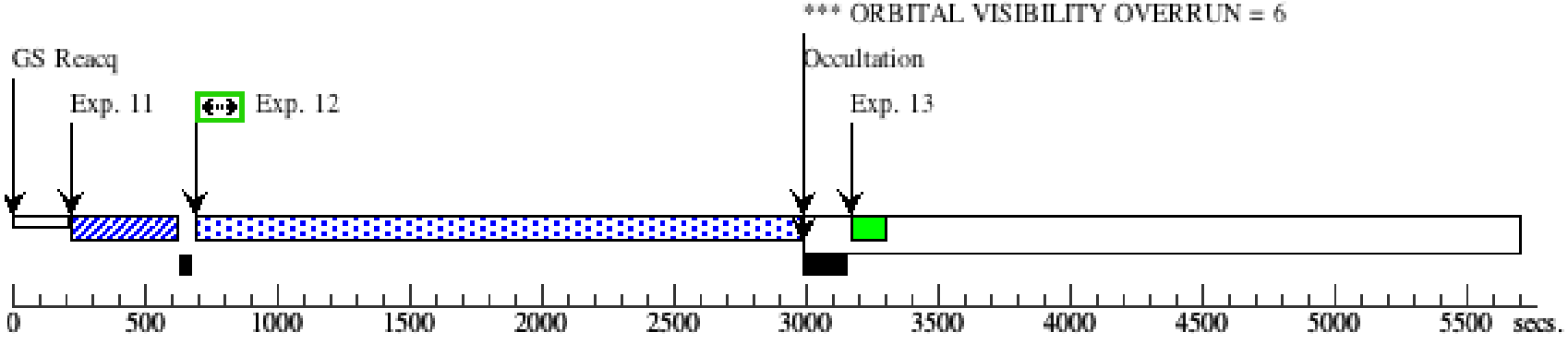
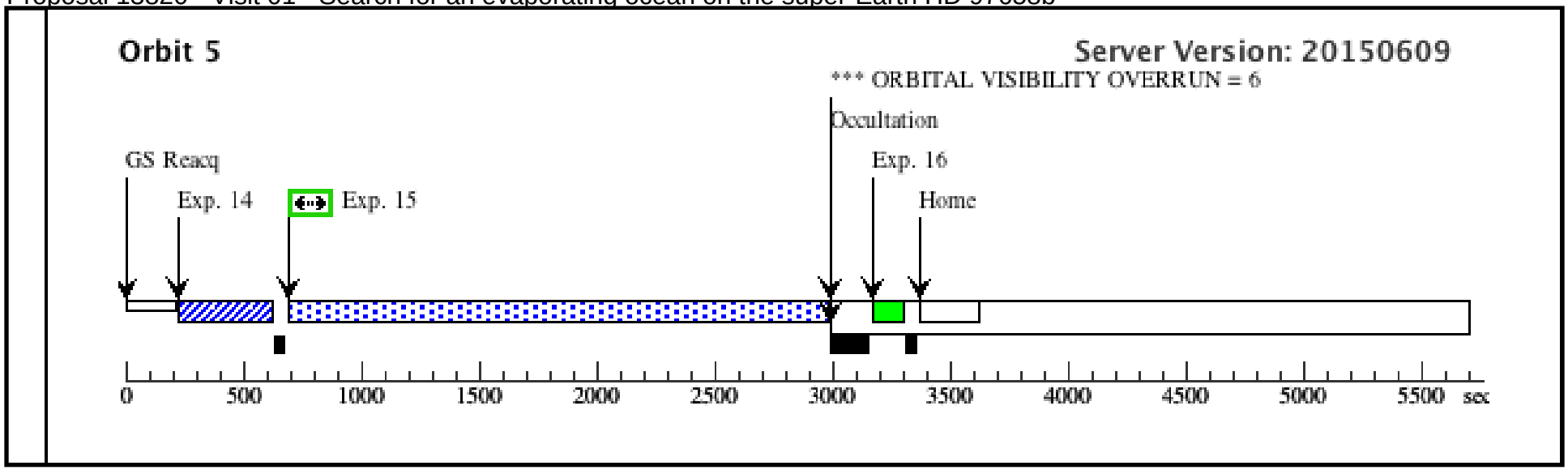
Server Version: 20150609

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5500
sec

Visit

Proposal 13820, Visit 02, scheduling Fri Dec 18 02:07:12 GMT 2015

Diagnostic Status: Warning

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

Special Requirements: SCHED 100%; Period 9.4903 D AND ZERO-PHASE HJD2456523.12540

Diagnostics

(Visit 02) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Visit 02) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Visit 02) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Visit 02) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Visit 02) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

Fixed Targets

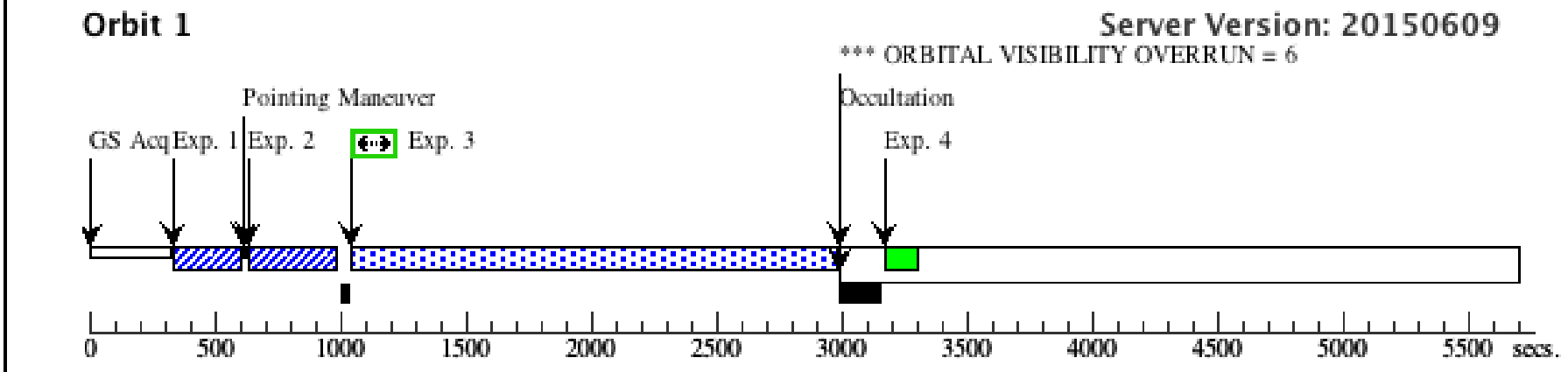
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HD-97658	RA: 11 14 33.1604 (168.6381683d)	Proper Motion RA: -106.48 mas/yr	V=7.714	Reference Frame: ICRS
	Alt Name1: HIP54906	Dec: +25 42 37.40 (25.71039d)	Proper Motion Dec: 48.82 mas/yr	U=9.049,	
	Alt Name2: GSC01981-01168	Equinox: J2000	Parallax: 0.004736"	B=8.569	
			Epoch of Position: 2000		
			Radial Velocity: -1.89 km/sec		

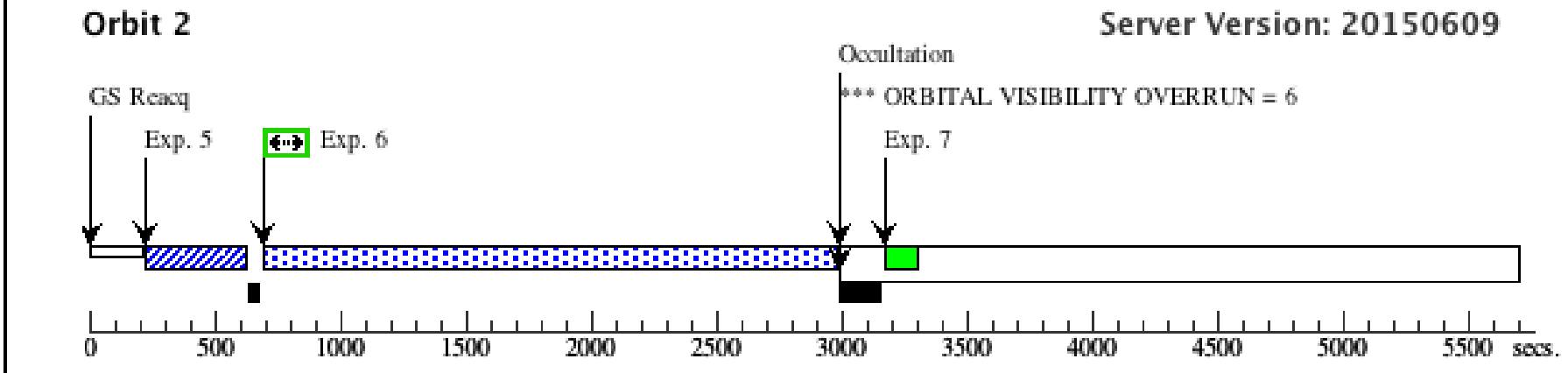
Comments: The J=2000 coordinates are from the GSC 2.3 (hstID: N6O1000085).
The uncertainties on coordinates, proper motions, and annual parallax comes from SIMBAD. The star has Hipparcos astrometric coordinates (HIP 54906).

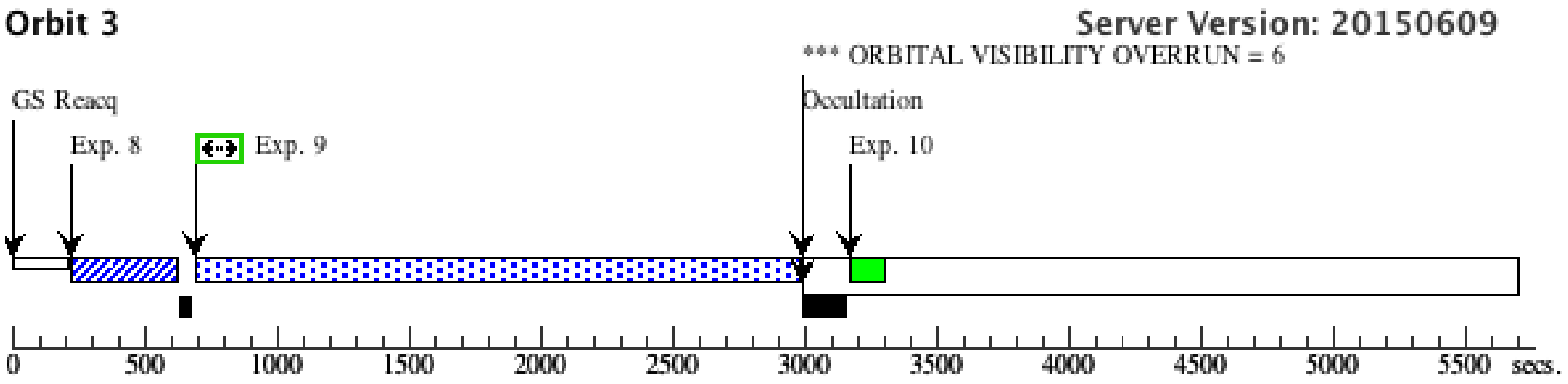
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ	(1) HD-97658	STIS/CCD, ACQ, F28X50OII	MIRROR		PHASE 0.979 TO 0.9845	Sequence 1-4 Non-Int in Visit 02	2 Secs (2 Secs) *[==>]*	 ***[1]***
2	ACQ/PEAK	(1) HD-97658	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 1-4 Non-Int in Visit 02	1 Secs (1 Secs) *[==>]*	 ***[1]***
3	SCI (STIS.sp.415446)	(1) HD-97658	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=5000; WAVECAL=NO		Sequence 1-4 Non-Int in Visit 02	1796 Secs (1796 Secs) *[==>]*	 ***[1]***
Comments: The ETC run # refers to a previous run performed for a nearly identical programme with the target star HD 189733, which is a close twin of HD 97658b: same V magnitude, same stellar distance, and same spectral type. Hence, we expect a very similar Lyman-alpha emission profile. Previous STIS/G140M spectrum of HD 189733 has been used as input to the ETC (user uploaded spectrum). We are basically photon-starved and set the exposure time to the maximum possible value.									
4	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 1-4 Non-Int in Visit 02	*[==>]*	***[1]***
5	ACQ/PEAK	(1) HD-97658	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 5-7 Non-Int in Visit 02	1 Secs (1 Secs) *[==>]*	 ***[2]***
6	SCI (STIS.sp.415446)	(1) HD-97658	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=5000		Sequence 5-7 Non-Int in Visit 02	2153 Secs (2153 Secs) *[==>]*	 ***[2]***
7	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 5-7 Non-Int in Visit 02	*[==>]*	***[2]***
8	ACQ/PEAK	(1) HD-97658	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 8-10 Non-Int in Visit 02	1 Secs (1 Secs) *[==>]*	 ***[3]***
9	SCI (STIS.sp.415446)	(1) HD-97658	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=5000		Sequence 8-10 Non-Int in Visit 02	2153 Secs (2153 Secs) *[==>]*	 ***[3]***
10	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 8-10 Non-Int in Visit 02	*[==>]*	***[3]***
11	ACQ/PEAK	(1) HD-97658	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 11-13 Non-Int in Visit 02	1 Secs (1 Secs) *[==>]*	 ***[4]***
12	SCI (STIS.sp.415446)	(1) HD-97658	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=5000		Sequence 11-13 Non-Int in Visit 02	2153 Secs (2153 Secs) *[==>]*	 ***[4]***
13	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 11-13 Non-Int in Visit 02	*[==>]*	***[4]***
14	ACQ/PEAK	(1) HD-97658	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 14-16 Non-Int in Visit 02	1 Secs (1 Secs) *[==>]*	 ***[5]***
15	SCI (STIS.sp.415446)	(1) HD-97658	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=5000		Sequence 14-16 Non-Int in Visit 02	2153 Secs (2153 Secs) *[==>]*	 ***[5]***
16	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 14-16 Non-Int in Visit 02	*[==>]*	***[5]***

Orbit Structure



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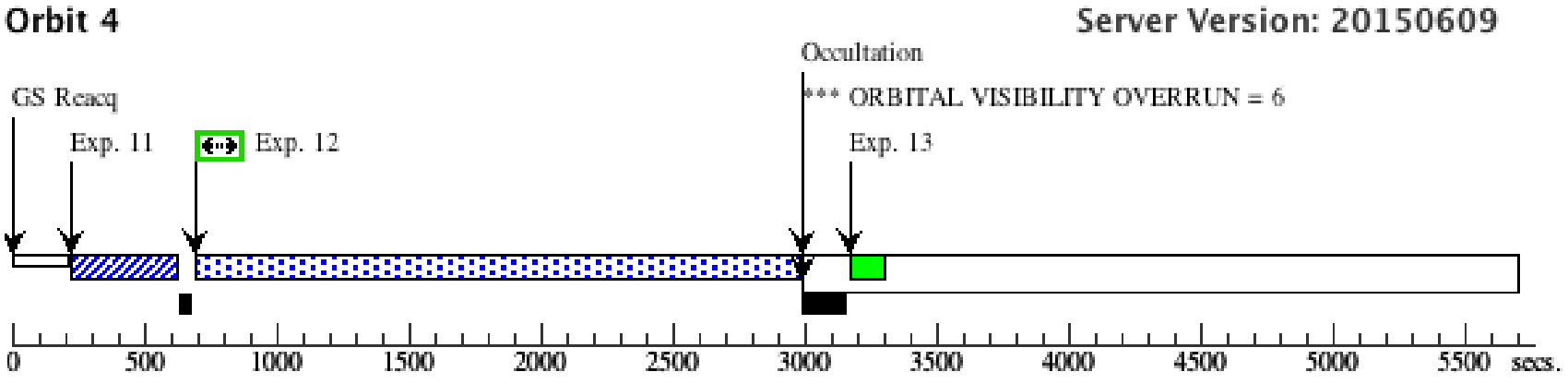
Orbit 4
Server Version: 20150609
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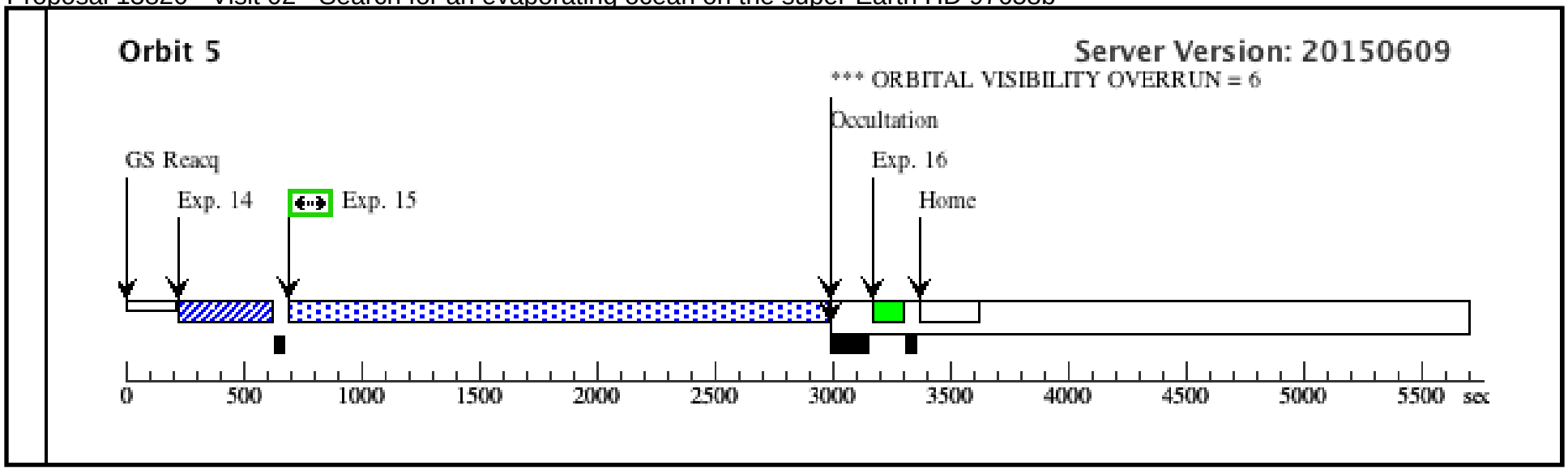
Orbit 5
Server Version: 20150609
*** ORBITAL VISIBILITY OVERRUN = 6
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GS Reacq
Exp. 14
Exp. 15
Exp. 16
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sec

Visit

Proposal 13820, Visit 04 Fri Dec 18 02:07:12 GMT 2015

Diagnostic Status: Warning

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

Special Requirements: SCHED 100%; Period 9.489264 D AND ZERO-PHASE HJD2456665.46415

Diagnostics

(Visit 04) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Visit 04) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Visit 04) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Visit 04) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Visit 04) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

Fixed Targets

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	Alt Name2: GSC01981-01168	Equinox: J2000	Parallax: 0.004736"	B=8.569	
			Epoch of Position: 2000		
			Radial Velocity: -1.89 km/sec		

Comments: The J=2000 coordinates are from the GSC 2.3 (hstID: N6O1000085).
The uncertainties on coordinates, proper motions, and annual parallax comes from SIMBAD. The star has Hipparcos astrometric coordinates (HIP 54906).

Exposures

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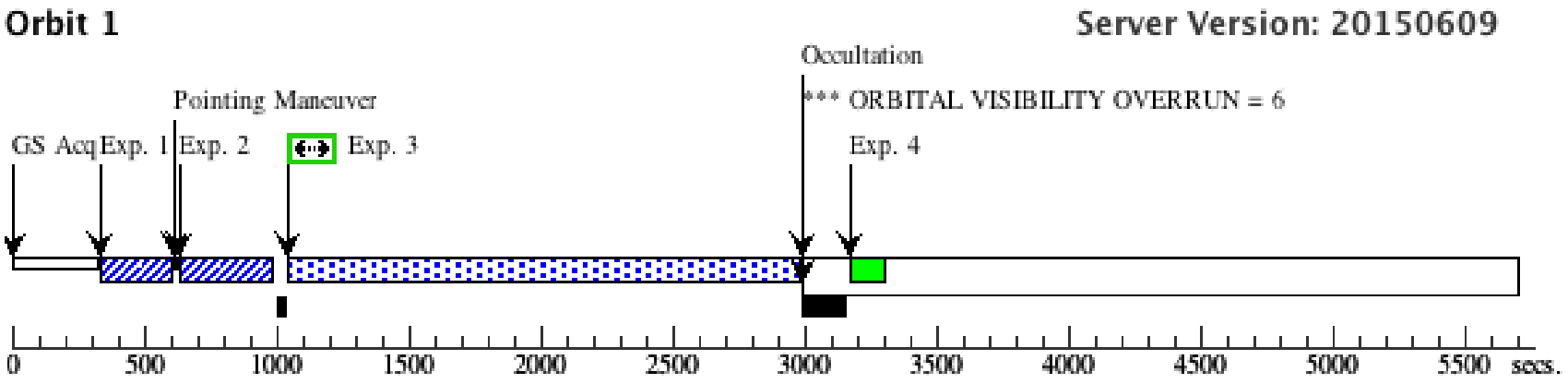
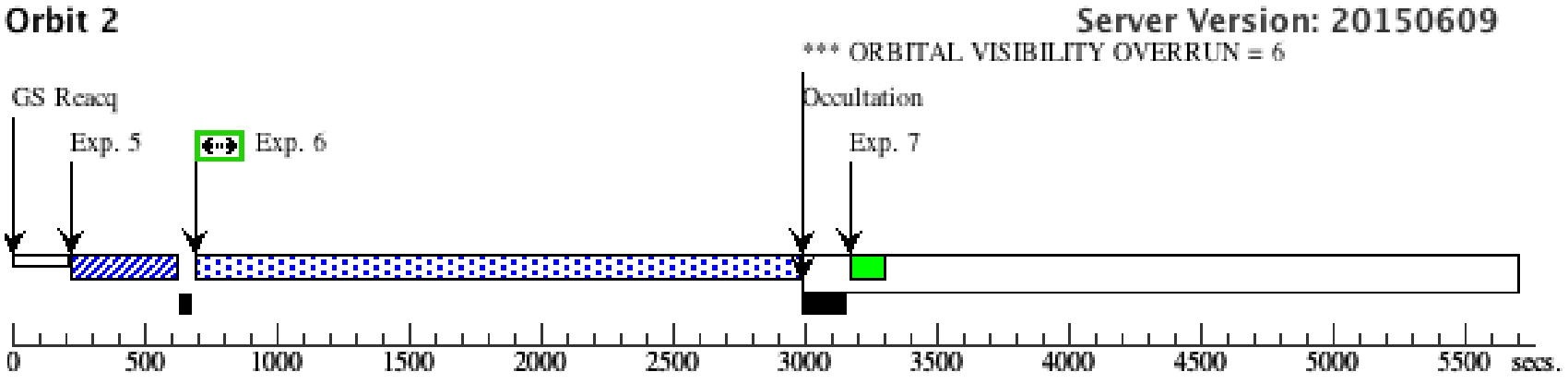
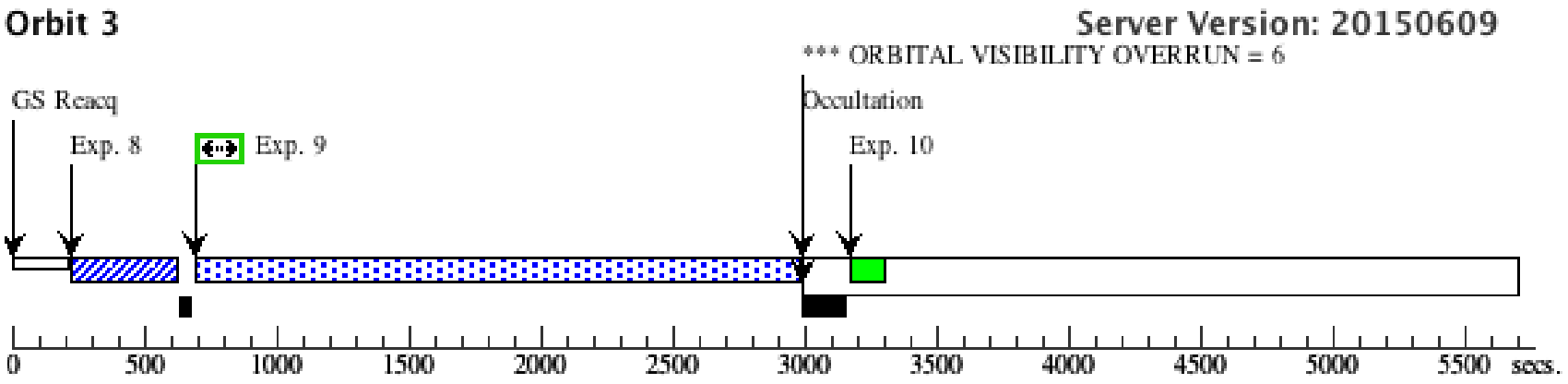
1	ACQ	(1) HD-97658	STIS/CCD, ACQ, F28X50OII	MIRROR		PHASE 0.971 TO 0.982	Sequence 1-4 Non-Int in Visit 04	2 Secs (2 Secs) *[==>]*	***[1]***
2	ACQ/PEAK	(1) HD-97658	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 1-4 Non-Int in Visit 04	1 Secs (1 Secs) *[==>]*	***[1]***
3	SCI (STIS.sp.415446)	(1) HD-97658	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=5000; WAVECAL=NO		Sequence 1-4 Non-Int in Visit 04	1796 Secs (1796 Secs) *[==>]*	***[1]***
Comments: The ETC run # refers to a previous run performed for a nearly identical programme with the target star HD 189733, which is a close twin of HD 97658b: same V magnitude, same stellar distance, and same spectral type. Hence, we expect a very similar Lyman-alpha emission profile. Previous STIS/G140M spectrum of HD 189733 has been used as input to the ETC (user uploaded spectrum). We are basically photon-starved and set the exposure time to the maximum possible value.									
4	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 1-4 Non-Int in Visit 04	*[==>]*	***[1]***
5	ACQ/PEAK	(1) HD-97658	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 5-7 Non-Int in Visit 04	1 Secs (1 Secs) *[==>]*	***[2]***
6	SCI (STIS.sp.415446)	(1) HD-97658	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=5000		Sequence 5-7 Non-Int in Visit 04	2153 Secs (2153 Secs) *[==>]*	***[2]***
7	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 5-7 Non-Int in Visit 04	*[==>]*	***[2]***
8	ACQ/PEAK	(1) HD-97658	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 8-10 Non-Int in Visit 04	1 Secs (1 Secs) *[==>]*	***[3]***
9	SCI (STIS.sp.415446)	(1) HD-97658	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=5000		Sequence 8-10 Non-Int in Visit 04	2153 Secs (2153 Secs) *[==>]*	***[3]***
10	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 8-10 Non-Int in Visit 04	*[==>]*	***[3]***
11	ACQ/PEAK	(1) HD-97658	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 11-13 Non-Int in Visit 04	1 Secs (1 Secs) *[==>]*	***[4]***
12	SCI (STIS.sp.415446)	(1) HD-97658	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=5000		Sequence 11-13 Non-Int in Visit 04	2153 Secs (2153 Secs) *[==>]*	***[4]***
13	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 11-13 Non-Int in Visit 04	*[==>]*	***[4]***
14	ACQ/PEAK	(1) HD-97658	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 14-16 Non-Int in Visit 04	1 Secs (1 Secs) *[==>]*	***[5]***
15	SCI (STIS.sp.415446)	(1) HD-97658	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=5000		Sequence 14-16 Non-Int in Visit 04	2153 Secs (2153 Secs) *[==>]*	***[5]***
16	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 14-16 Non-Int in Visit 04	*[==>]*	***[5]***

Orbit Structure



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Occultation
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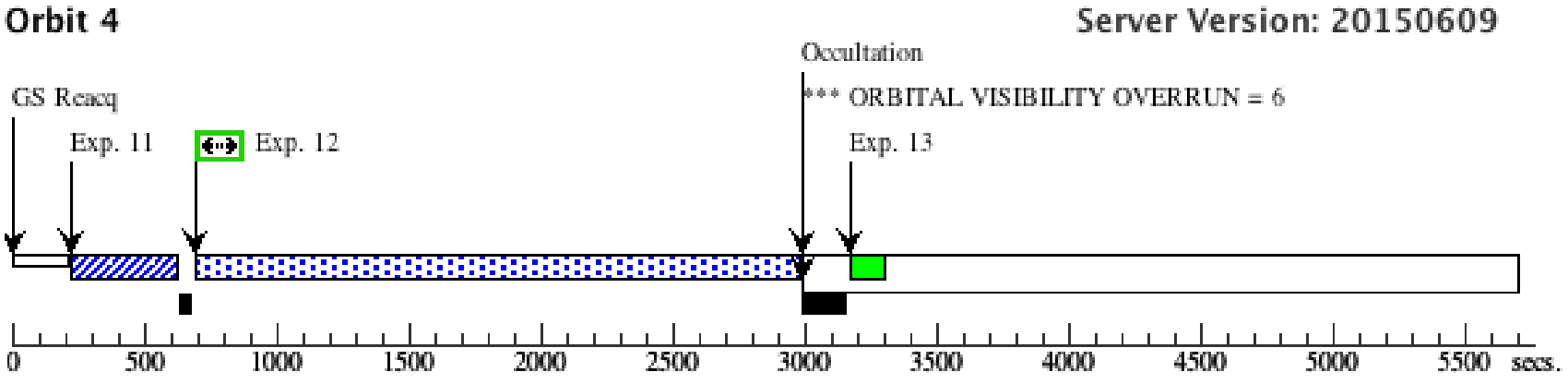
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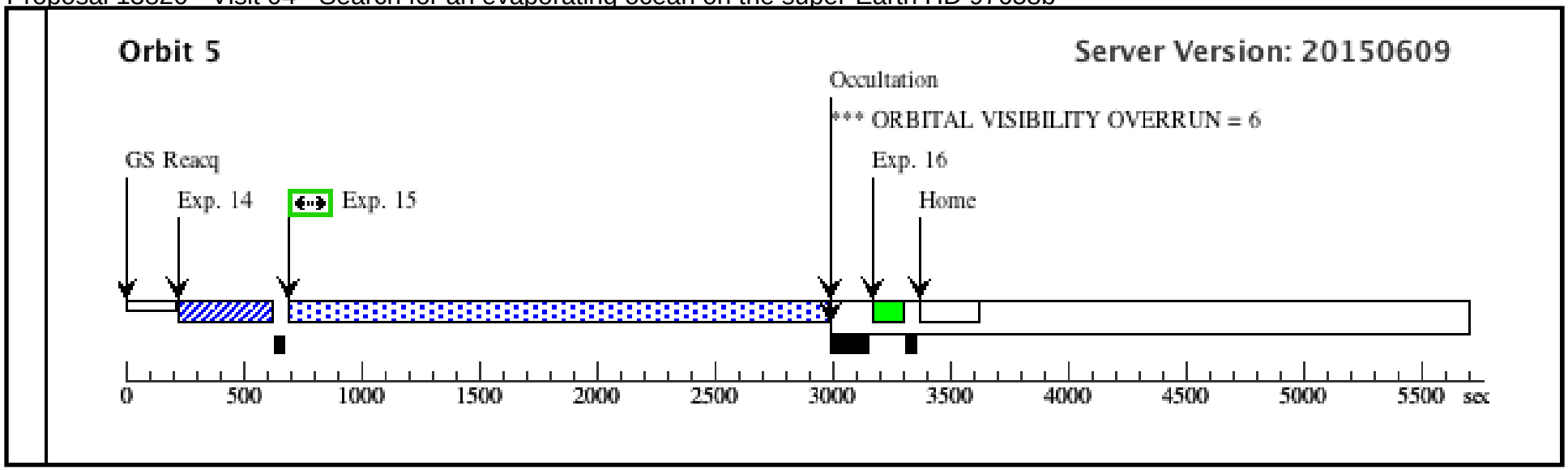
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Exp. 15
Exp. 16
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1000
1500
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2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 13820, Visit 03, completed Fri Dec 18 02:07:12 GMT 2015

Diagnostic Status: Warning

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

Special Requirements: SCHED 100%; Period 9.4903 D AND ZERO-PHASE HJD2456523.12540

Diagnostics

(Visit 03) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Visit 03) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Visit 03) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Visit 03) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Visit 03) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

Fixed Targets

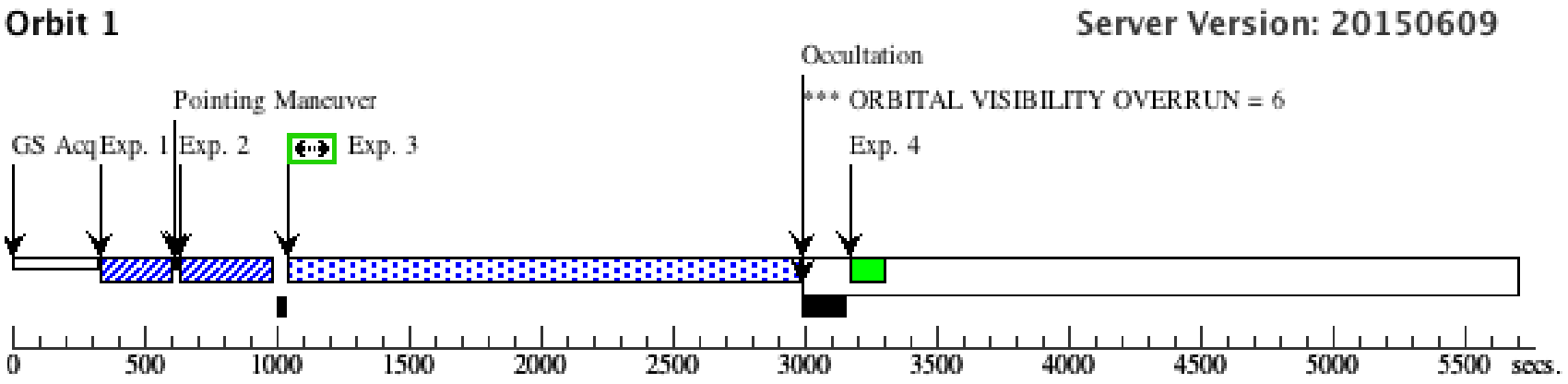
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HD-97658	RA: 11 14 33.1604 (168.6381683d)	Proper Motion RA: -106.48 mas/yr	V=7.714	Reference Frame: ICRS
	Alt Name1: HIP54906	Dec: +25 42 37.40 (25.71039d)	Proper Motion Dec: 48.82 mas/yr	U=9.049,	
	Alt Name2: GSC01981-01168	Equinox: J2000	Parallax: 0.004736"	B=8.569	
			Epoch of Position: 2000		
			Radial Velocity: -1.89 km/sec		

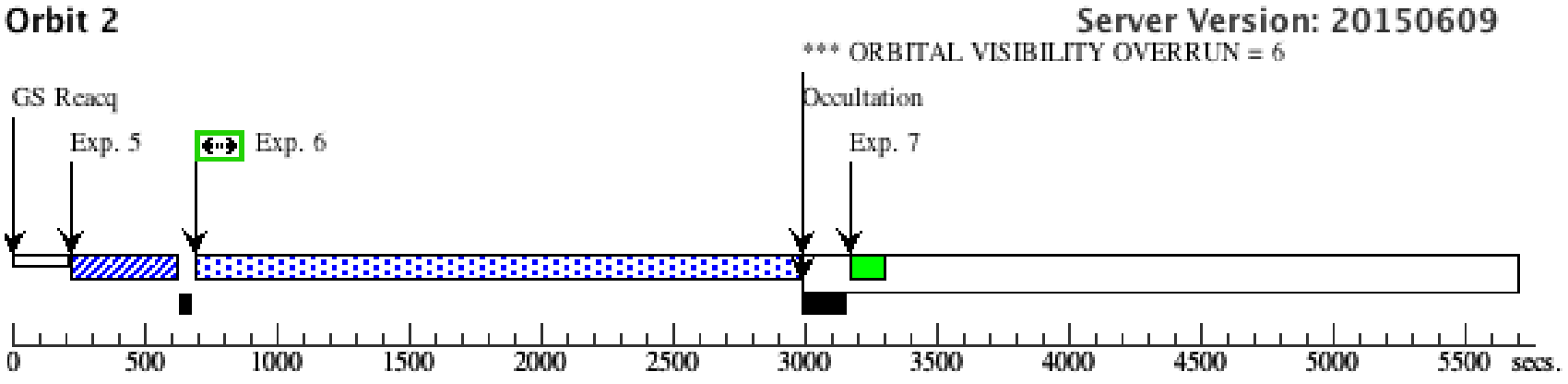
Comments: The J=2000 coordinates are from the GSC 2.3 (hstID: N6O1000085).
The uncertainties on coordinates, proper motions, and annual parallax comes from SIMBAD. The star has Hipparcos astrometric coordinates (HIP 54906).

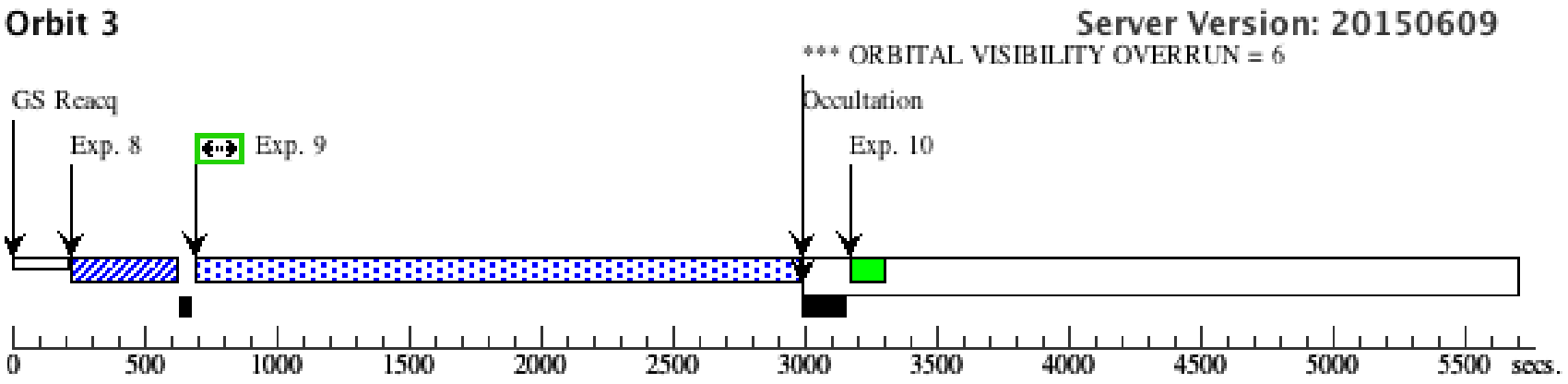
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ	(1) HD-97658	STIS/CCD, ACQ, F28X50OII	MIRROR		PHASE 0.979 TO 0.9825	Sequence 1-4 Non-Int in Visit 03	2 Secs (2 Secs) *[==>]*	 ***[1]***
2	ACQ/PEAK	(1) HD-97658	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 1-4 Non-Int in Visit 03	1 Secs (1 Secs) *[==>]*	 ***[1]***
3	SCI (STIS.sp.415446)	(1) HD-97658	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=5000; WAVECAL=NO		Sequence 1-4 Non-Int in Visit 03	1796 Secs (1796 Secs) *[==>]*	 ***[1]***
Comments: The ETC run # refers to a previous run performed for a nearly identical programme with the target star HD 189733, which is a close twin of HD 97658b: same V magnitude, same stellar distance, and same spectral type. Hence, we expect a very similar Lyman-alpha emission profile. Previous STIS/G140M spectrum of HD 189733 has been used as input to the ETC (user uploaded spectrum). We are basically photon-starved and set the exposure time to the maximum possible value.									
4	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 1-4 Non-Int in Visit 03	*[==>]*	***[1]***
5	ACQ/PEAK	(1) HD-97658	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 5-7 Non-Int in Visit 03	1 Secs (1 Secs) *[==>]*	 ***[2]***
6	SCI (STIS.sp.415446)	(1) HD-97658	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=5000		Sequence 5-7 Non-Int in Visit 03	2153 Secs (2153 Secs) *[==>]*	 ***[2]***
7	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 5-7 Non-Int in Visit 03	*[==>]*	***[2]***
8	ACQ/PEAK	(1) HD-97658	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 8-10 Non-Int in Visit 03	1 Secs (1 Secs) *[==>]*	 ***[3]***
9	SCI (STIS.sp.415446)	(1) HD-97658	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=5000		Sequence 8-10 Non-Int in Visit 03	2153 Secs (2153 Secs) *[==>]*	 ***[3]***
10	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 8-10 Non-Int in Visit 03	*[==>]*	***[3]***
11	ACQ/PEAK	(1) HD-97658	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 11-13 Non-Int in Visit 03	1 Secs (1 Secs) *[==>]*	 ***[4]***
12	SCI (STIS.sp.415446)	(1) HD-97658	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=5000		Sequence 11-13 Non-Int in Visit 03	2153 Secs (2153 Secs) *[==>]*	 ***[4]***
13	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 11-13 Non-Int in Visit 03	*[==>]*	***[4]***
14	ACQ/PEAK	(1) HD-97658	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 14-16 Non-Int in Visit 03	1 Secs (1 Secs) *[==>]*	 ***[5]***
15	SCI (STIS.sp.415446)	(1) HD-97658	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=5000		Sequence 14-16 Non-Int in Visit 03	2153 Secs (2153 Secs) *[==>]*	 ***[5]***
16	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 14-16 Non-Int in Visit 03	*[==>]*	***[5]***

Orbit Structure



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GS Reacq
Exp. 8
Exp. 9
Occultation
Exp. 10
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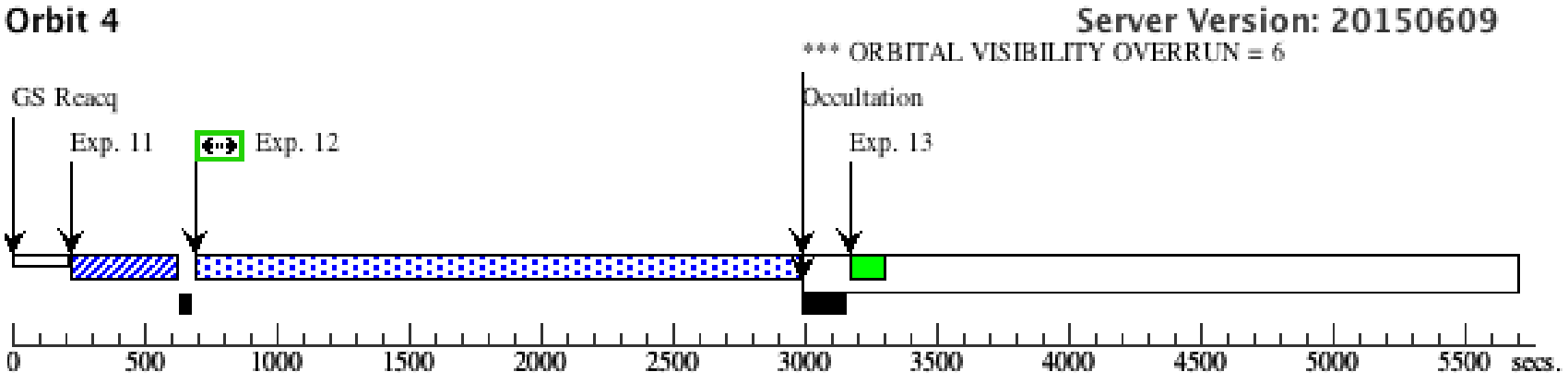
5500
secs.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Exp. 12
Occultation
Exp. 13
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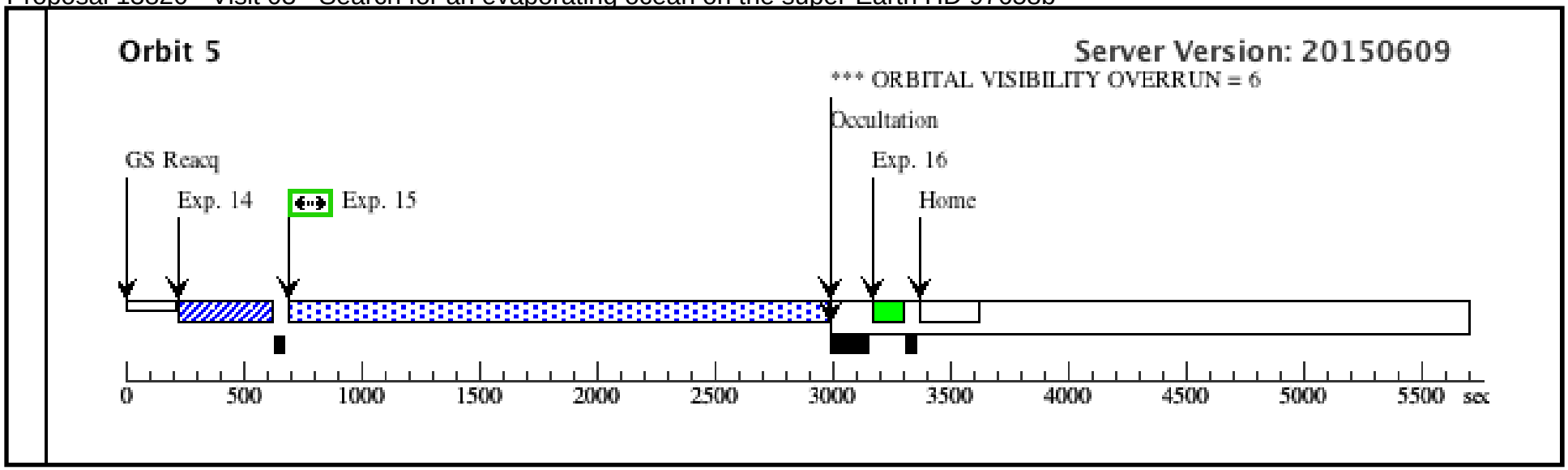
secs.


Orbit 5
Server Version: 20150609
*** ORBITAL VISIBILITY OVERRUN = 6
Occultation
GS Reacq
Exp. 14
Exp. 15
Exp. 16
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1500
2000
2500
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sec