



17537 - How shiny is HD209458b in the NUV?

Cycle: 31, Proposal Category: GO

(Availability Mode: AVAILABLE)

INVESTIGATORS

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Prof. David K. Sing (CoI)	The Johns Hopkins University
Dr. Peter Gao (CoI)	Carnegie Institution of Washington
Dr. Joshua D. Lothringer (CoI)	Space Telescope Science Institute

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-209458 WAVE	STIS/CCD	5	16-Jul-2024 15:01:10.0	yes
51	(1) HD-209458 WAVE	STIS/CCD	5	16-Jul-2024 15:01:15.0	yes
02	(1) HD-209458 WAVE	STIS/CCD	5	16-Jul-2024 15:01:20.0	yes

15 Total Orbits Used

ABSTRACT

Recent CHEOPS detection of reflected light on HD209458b indicated a geometric albedo consistent with a clear atmosphere and Rayleigh scattering from hydrogen. However, broadband photometry could not provide any additional spectral information. We propose to follow up with eclipse

Proposal 17537 (STScI Edit Number: 3, Created: Tuesday, July 16, 2024 at 2:01:21 PM Eastern Standard Time) - Overview

observation using STIS G430L in spatial scan mode to measure the Rayleigh scattering slope in the blue part of the spectrum and search for any aerosol spectral features.

OBSERVING DESCRIPTION

We need two visit with 5 consecutive orbits each to observe the eclipses of HD 209458b with STIS G430L in spatial scan mode. We request a phase window constraint of 30 mins to capture the full eclipse and out-of-eclipse baseline.

Proposal 17537 - Visit 01 - How shiny is HD209458b in the NUV?

Visit	Proposal 17537, Visit 01, failed Tue Jul 16 19:01:21 GMT 2024 Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD Special Requirements: SCHED 100%; Period 3.52474859 D AND ZERO-PHASE HJD2455015.49844					
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes
(1)		HD-209458	RA: 22 03 10.8053 (330.7950221d) Dec: +18 53 3.27 (18.88424d) Equinox: J2000	Proper Motion RA: 0.0020972877496707944 sec of time/yr Proper Motion Dec: -0.017976000003727677 arcsec/yr Epoch of Position: 2015.5	V=7.63	Reference Frame: ICRS
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=STAR Description=[EXTRA-SOLAR PLANET, G III-I] Extended=NO						

Proposal 17537 - Visit 01 - How shiny is HD209458b in the NUV?

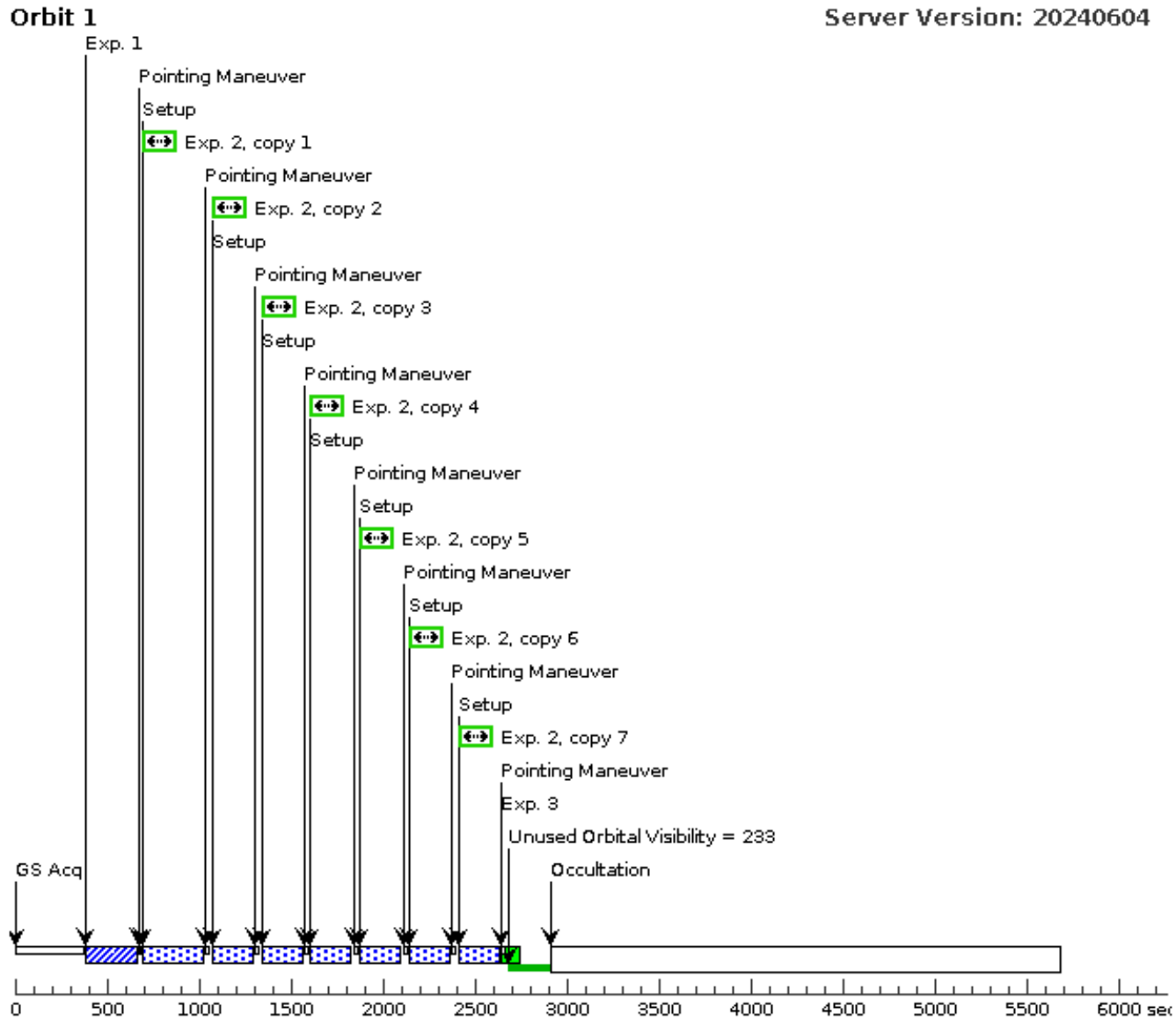
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(1891575)	(1) HD-209458	STIS/CCD, ACQ, F28X50OIII	MIRROR		PHASE 0.4527 TO 0.4586	Sequence 1-3 Non-Int in Visit 01	1 Secs (1 Secs) [==>]	[1]
2		(1) HD-209458	STIS/CCD, ACCUM, 52X2	G430L 4300 A	GAIN=4; CR-SPLIT=NO; WAVECAL=NO; SIZEAXIS2=512; CENTERAXIS2=513	POS TARG 0,-6; SPATIAL SCAN 0.0 625,90.0 Degrees,Forward	Sequence 1-3 Non-Int in Visit 01	194 Secs X 7 (1358 Secs) [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)] [==>(Copy 7)]	[1]
3	WAVECAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G430L 4300 A			Sequence 1-3 Non-Int in Visit 01	[==>]	[1]
4		(1) HD-209458	STIS/CCD, ACCUM, 52X2	G430L 4300 A	GAIN=4; CR-SPLIT=NO; WAVECAL=NO; CENTERAXIS2=513; SIZEAXIS2=512	POS TARG 0,-6; SPATIAL SCAN 0.0 625,90.0 Degrees,Forward	Sequence 4-5 Non-Int in Visit 01	194 Secs X 8 (1552 Secs) [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)] [==>(Copy 7)] [==>(Copy 8)]	[2]
5	WAVECAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G430L 4300 A			Sequence 4-5 Non-Int in Visit 01	[==>]	[2]
6		(1) HD-209458	STIS/CCD, ACCUM, 52X2	G430L 4300 A	GAIN=4; CR-SPLIT=NO; WAVECAL=NO; CENTERAXIS2=513; SIZEAXIS2=512	POS TARG 0,-6; SPATIAL SCAN 0.0 625,90.0 Degrees,Forward	Sequence 6-7 Non-Int in Visit 01	194 Secs X 8 (1552 Secs) [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)] [==>(Copy 7)] [==>(Copy 8)]	[3]
7	WAVECAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G430L 4300 A			Sequence 6-7 Non-Int in Visit 01	[==>]	[3]
8		(1) HD-209458	STIS/CCD, ACCUM, 52X2	G430L 4300 A	GAIN=4; CR-SPLIT=NO; WAVECAL=NO; CENTERAXIS2=513; SIZEAXIS2=512	POS TARG 0,-6; SPATIAL SCAN 0.0 625,90.0 Degrees,Forward	Sequence 8-9 Non-Int in Visit 01	194 Secs X 8 (1552 Secs) [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)] [==>(Copy 7)] [==>(Copy 8)]	[4]

Exposures

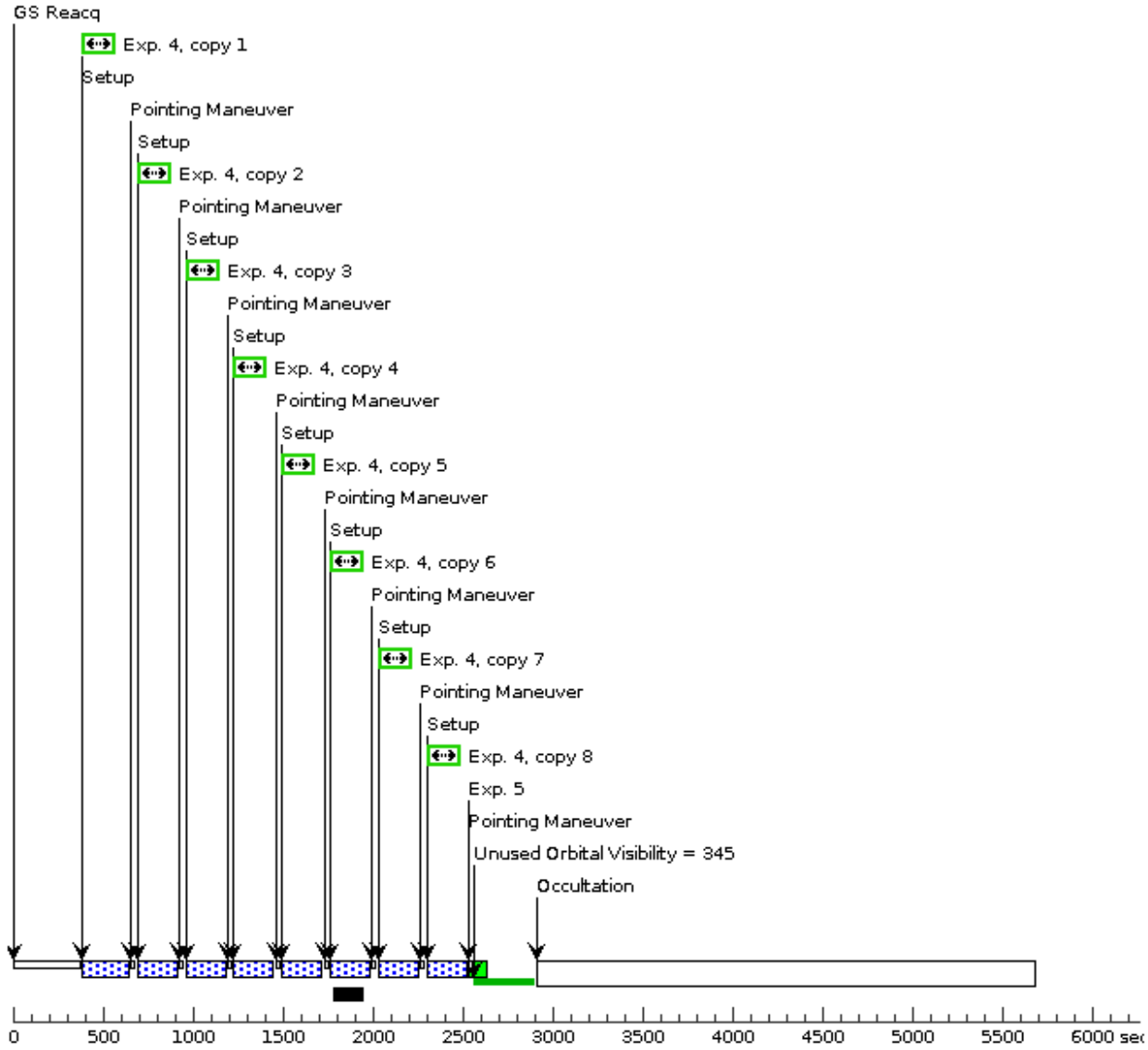
Proposal 17537 - Visit 01 - How shiny is HD209458b in the NUV?

9	WAVECAL WAVE	STIS/CCD, ACCUM, 52X0.1	G430L 4300 A			Sequence 8-9 Non-Int in Visit 01	[==>]	[4]
10	(1) HD-209458	STIS/CCD, ACCUM, 52X2	G430L 4300 A	GAIN=4; CR-SPLIT=NO; WAVECAL=NO; CENTERAXIS2=513; SIZEAXIS2=512	POS TARG 0,-6; SPATIAL SCAN 0.0 625,90.0 Degrees, Forward	Sequence 10-11 Non-Int in Visit 01	194 Secs X 8 (1552 Secs) [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)] [==>(Copy 7)] [==>(Copy 8)]	[5]
11	WAVECAL WAVE	STIS/CCD, ACCUM, 52X0.1	G430L 4300 A			Sequence 10-11 Non-Int in Visit 01	[==>]	[5]

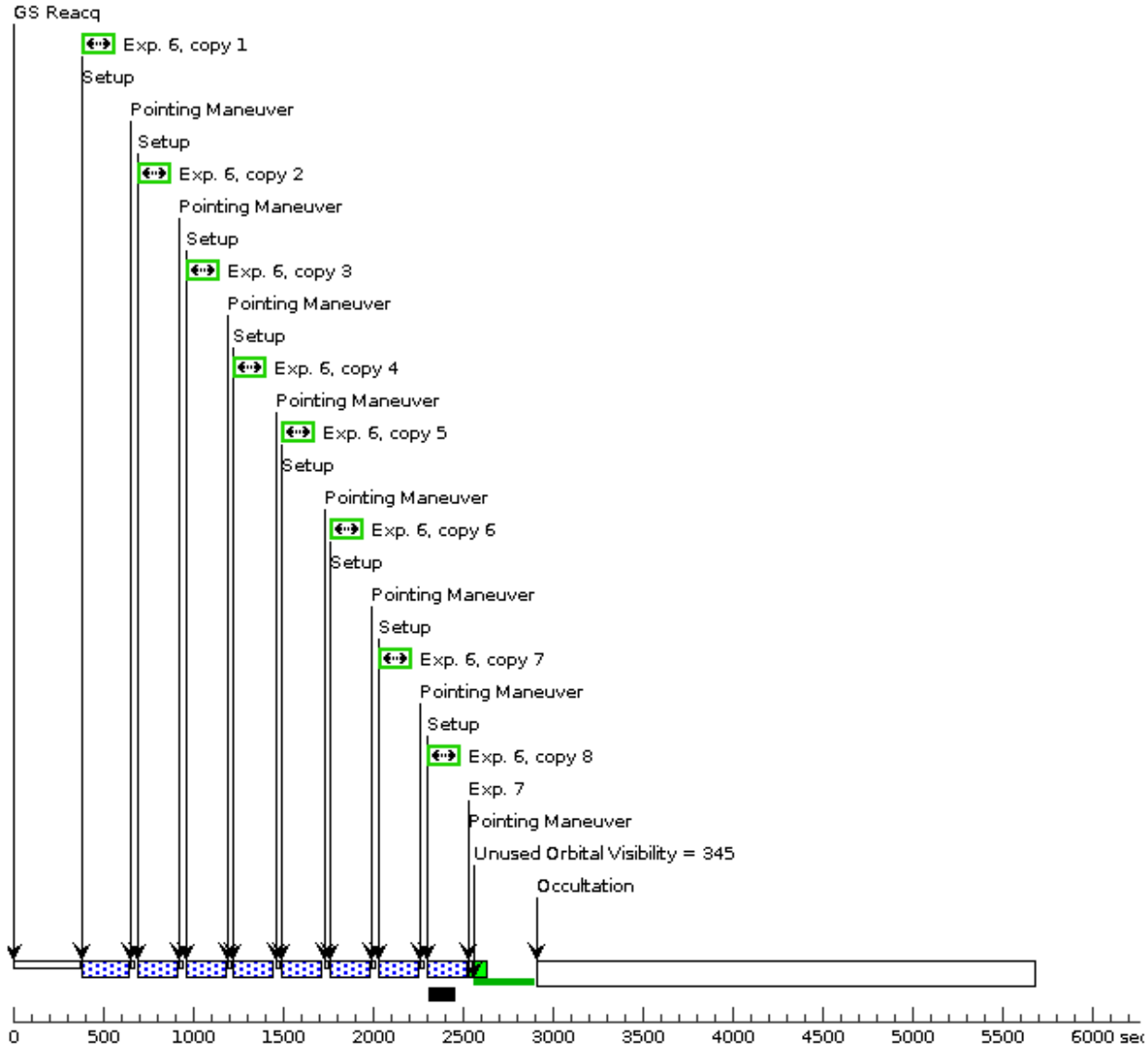
Orbit Structure

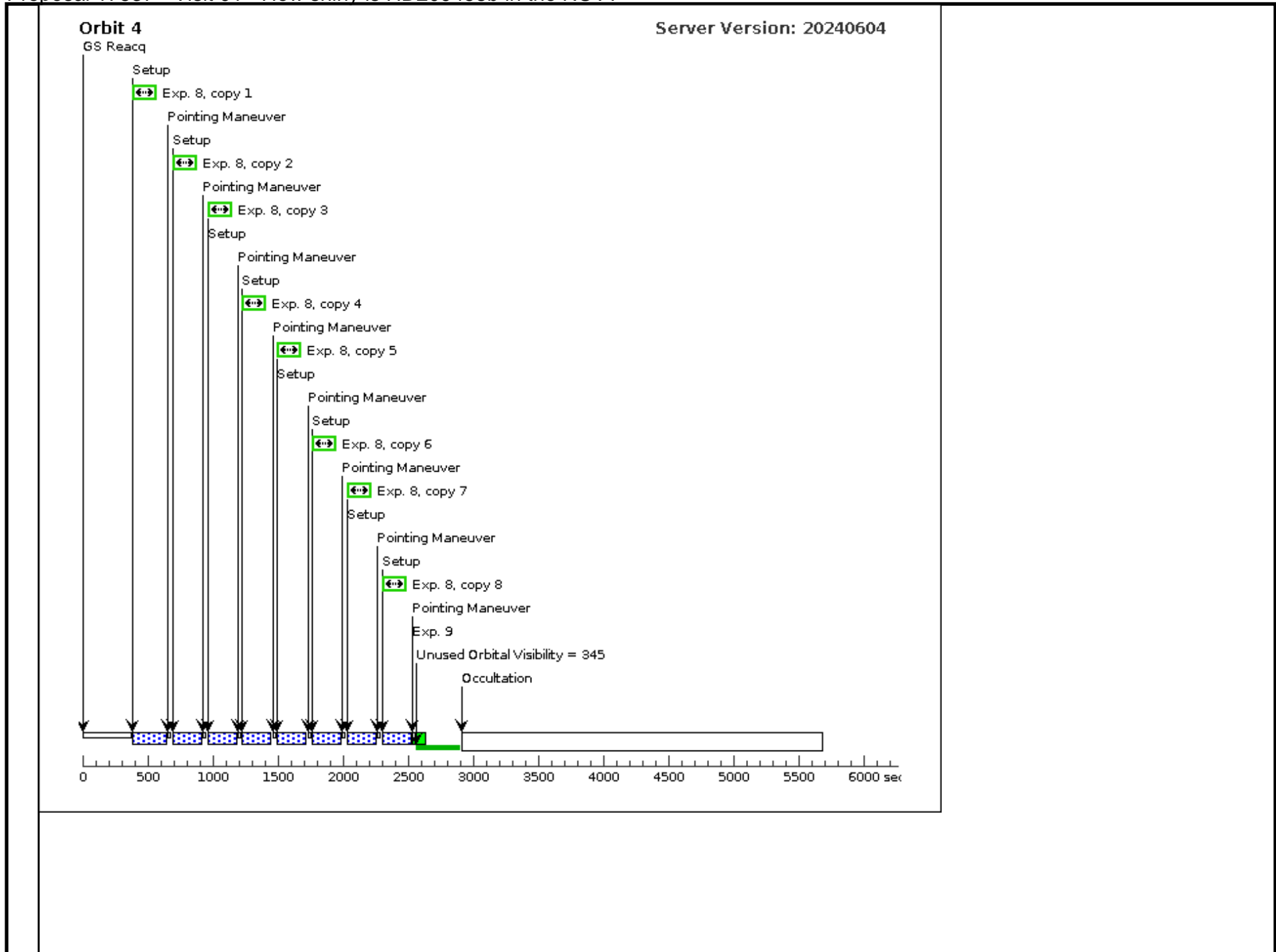


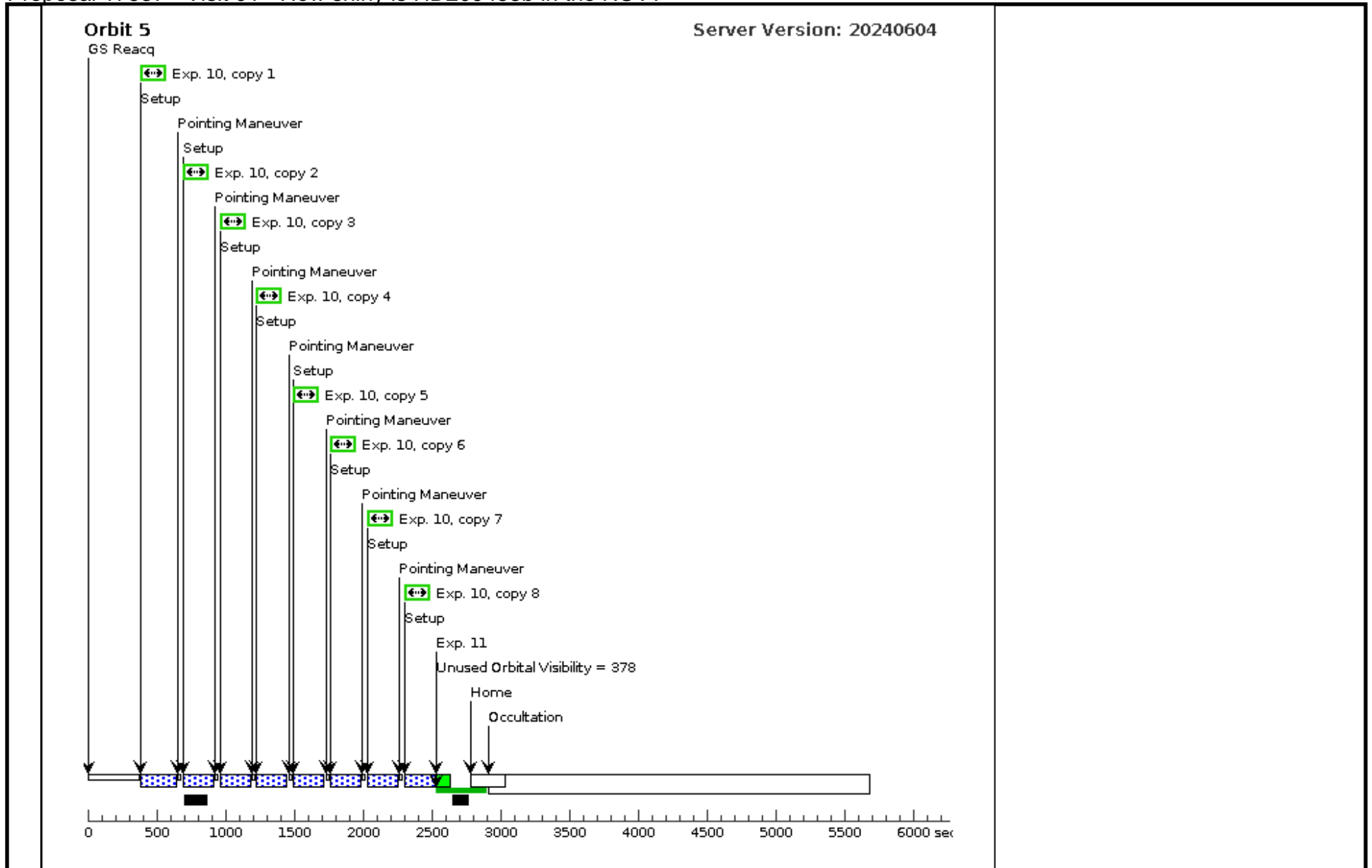
Orbit 2



Orbit 3







Proposal 17537 - Visit 51 - How shiny is HD209458b in the NUV?

Visit	Proposal 17537, Visit 51 Tue Jul 16 19:01:21 GMT 2024 Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD Special Requirements: SCHED 100%; Period 3.52474859 D AND ZERO-PHASE HJD2455015.49844 Comments: HOPR copy of visit 1												
	Fixed Targets	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td>HD-209458</td> <td> RA: 22 03 10.8053 (330.7950221d) Dec: +18 53 3.27 (18.88424d) Equinox: J2000 </td> <td> Proper Motion RA: 0.0020972877496707944 sec of time/yr Proper Motion Dec: -0.017976000003727677 arcsec/yr Epoch of Position: 2015.5 </td> <td>V=7.63</td> <td>Reference Frame: ICRS</td> </tr> </tbody> </table> <p> Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=STAR Description=[EXTRA-SOLAR PLANET, G III-I] Extended=NO </p>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(1)	HD-209458	RA: 22 03 10.8053 (330.7950221d) Dec: +18 53 3.27 (18.88424d) Equinox: J2000	Proper Motion RA: 0.0020972877496707944 sec of time/yr Proper Motion Dec: -0.017976000003727677 arcsec/yr Epoch of Position: 2015.5	V=7.63
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous								
(1)	HD-209458	RA: 22 03 10.8053 (330.7950221d) Dec: +18 53 3.27 (18.88424d) Equinox: J2000	Proper Motion RA: 0.0020972877496707944 sec of time/yr Proper Motion Dec: -0.017976000003727677 arcsec/yr Epoch of Position: 2015.5	V=7.63	Reference Frame: ICRS								

Proposal 17537 - Visit 51 - How shiny is HD209458b in the NUV?

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(1891575)	(1) HD-209458	STIS/CCD, ACQ, F28X50OIII	MIRROR		PHASE 0.4527 TO 0.4586	Sequence 1-3 Non-Int in Visit 51	1 Secs (1 Secs) [==>]	[1]
2		(1) HD-209458	STIS/CCD, ACCUM, 52X2	G430L 4300 A	GAIN=4; CR-SPLIT=NO; WAVECAL=NO; SIZEAXIS2=512; CENTERAXIS2=513	POS TARG 0,-6; SPATIAL SCAN 0.0 625,90.0 Degrees,Forward	Sequence 1-3 Non-Int in Visit 51	194 Secs X 7 (1358 Secs) [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)] [==>(Copy 7)]	[1]
3	WAVECAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G430L 4300 A			Sequence 1-3 Non-Int in Visit 51	[==>]	[1]
4		(1) HD-209458	STIS/CCD, ACCUM, 52X2	G430L 4300 A	GAIN=4; CR-SPLIT=NO; WAVECAL=NO; CENTERAXIS2=513; SIZEAXIS2=512	POS TARG 0,-6; SPATIAL SCAN 0.0 625,90.0 Degrees,Forward	Sequence 4-5 Non-Int in Visit 51	194 Secs X 8 (1552 Secs) [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)] [==>(Copy 7)] [==>(Copy 8)]	[2]
5	WAVECAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G430L 4300 A			Sequence 4-5 Non-Int in Visit 51	[==>]	[2]
6		(1) HD-209458	STIS/CCD, ACCUM, 52X2	G430L 4300 A	GAIN=4; CR-SPLIT=NO; WAVECAL=NO; CENTERAXIS2=513; SIZEAXIS2=512	POS TARG 0,-6; SPATIAL SCAN 0.0 625,90.0 Degrees,Forward	Sequence 6-7 Non-Int in Visit 51	194 Secs X 8 (1552 Secs) [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)] [==>(Copy 7)] [==>(Copy 8)]	[3]
7	WAVECAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G430L 4300 A			Sequence 6-7 Non-Int in Visit 51	[==>]	[3]
8		(1) HD-209458	STIS/CCD, ACCUM, 52X2	G430L 4300 A	GAIN=4; CR-SPLIT=NO; WAVECAL=NO; CENTERAXIS2=513; SIZEAXIS2=512	POS TARG 0,-6; SPATIAL SCAN 0.0 625,90.0 Degrees,Forward	Sequence 8-9 Non-Int in Visit 51	194 Secs X 8 (1552 Secs) [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)] [==>(Copy 7)] [==>(Copy 8)]	[4]

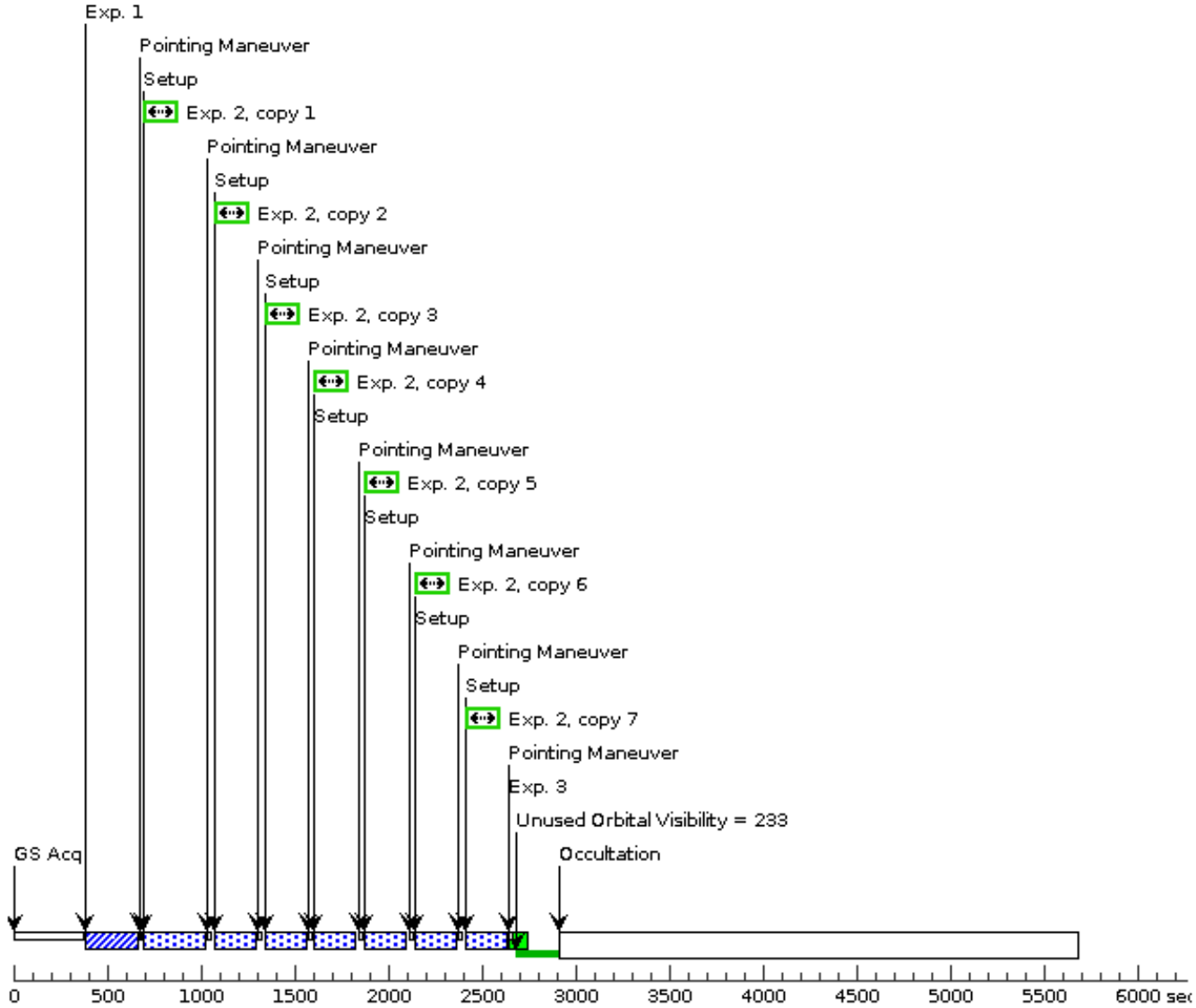
Exposures

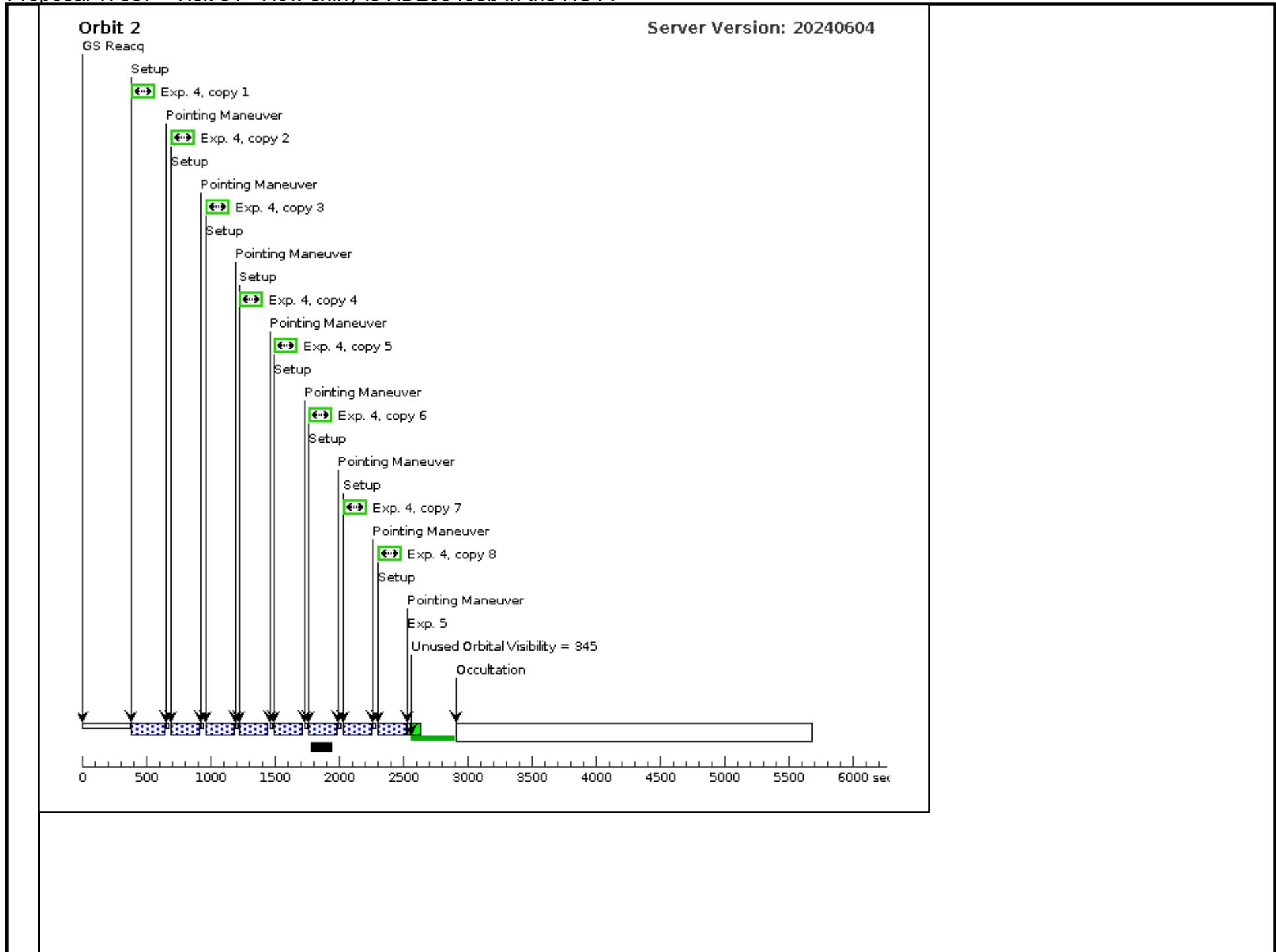
Proposal 17537 - Visit 51 - How shiny is HD209458b in the NUV?

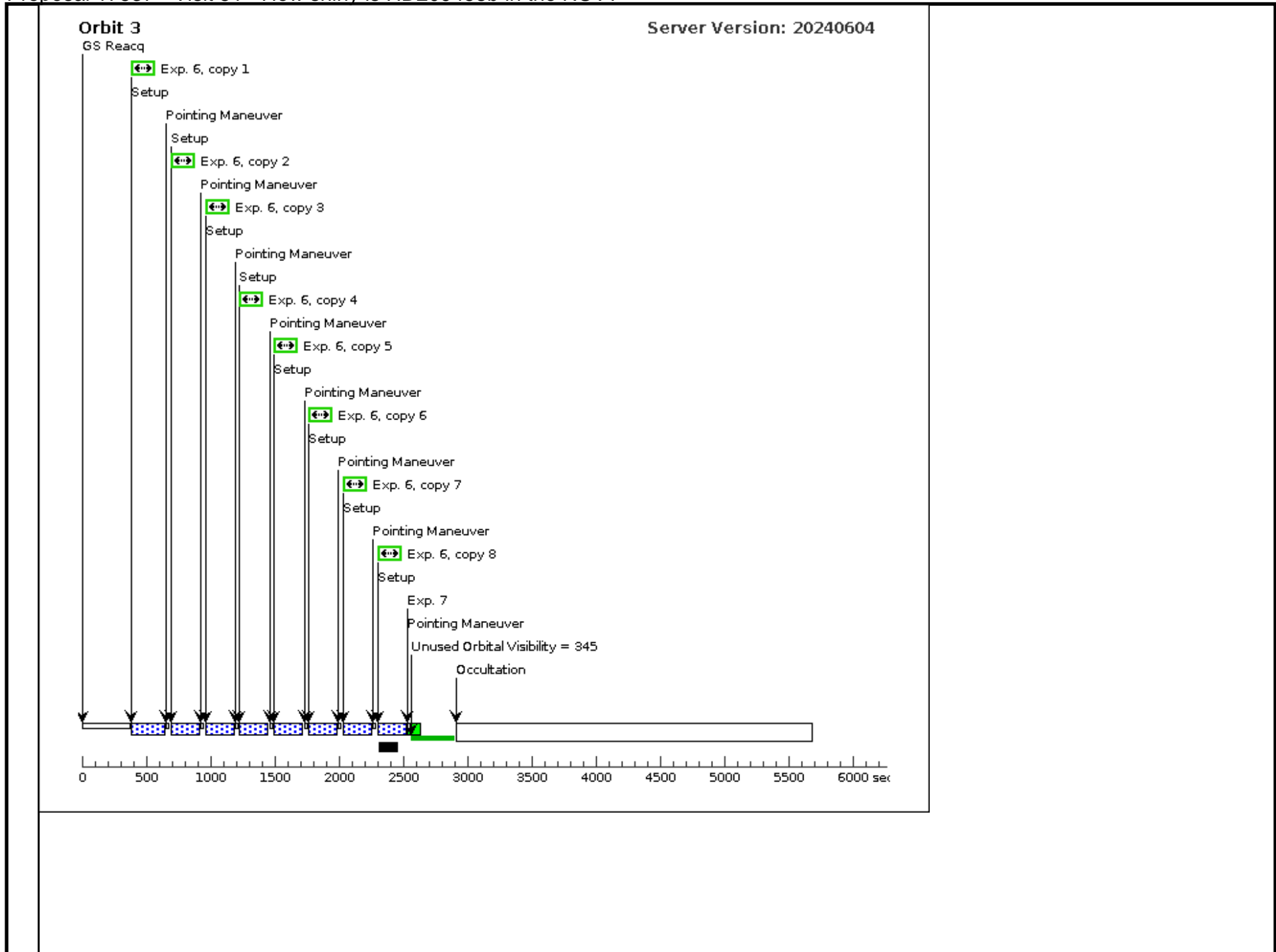
9	WAVECAL WAVE	STIS/CCD, ACCUM, 52X0.1	G430L 4300 A			Sequence 8-9 Non-Int in Visit 51	[==>]	[4]
10	(1) HD-209458	STIS/CCD, ACCUM, 52X2	G430L 4300 A	GAIN=4; CR-SPLIT=NO; WAVECAL=NO; CENTERAXIS2=513; SIZEAXIS2=512	POS TARG 0,-6; SPATIAL SCAN 0.0 625,90.0 Degrees, Forward	Sequence 10-11 Non-Int in Visit 51	194 Secs X 8 (1552 Secs) [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)] [==>(Copy 7)] [==>(Copy 8)]	[5]
11	WAVECAL WAVE	STIS/CCD, ACCUM, 52X0.1	G430L 4300 A			Sequence 10-11 Non-Int in Visit 51	[==>]	[5]

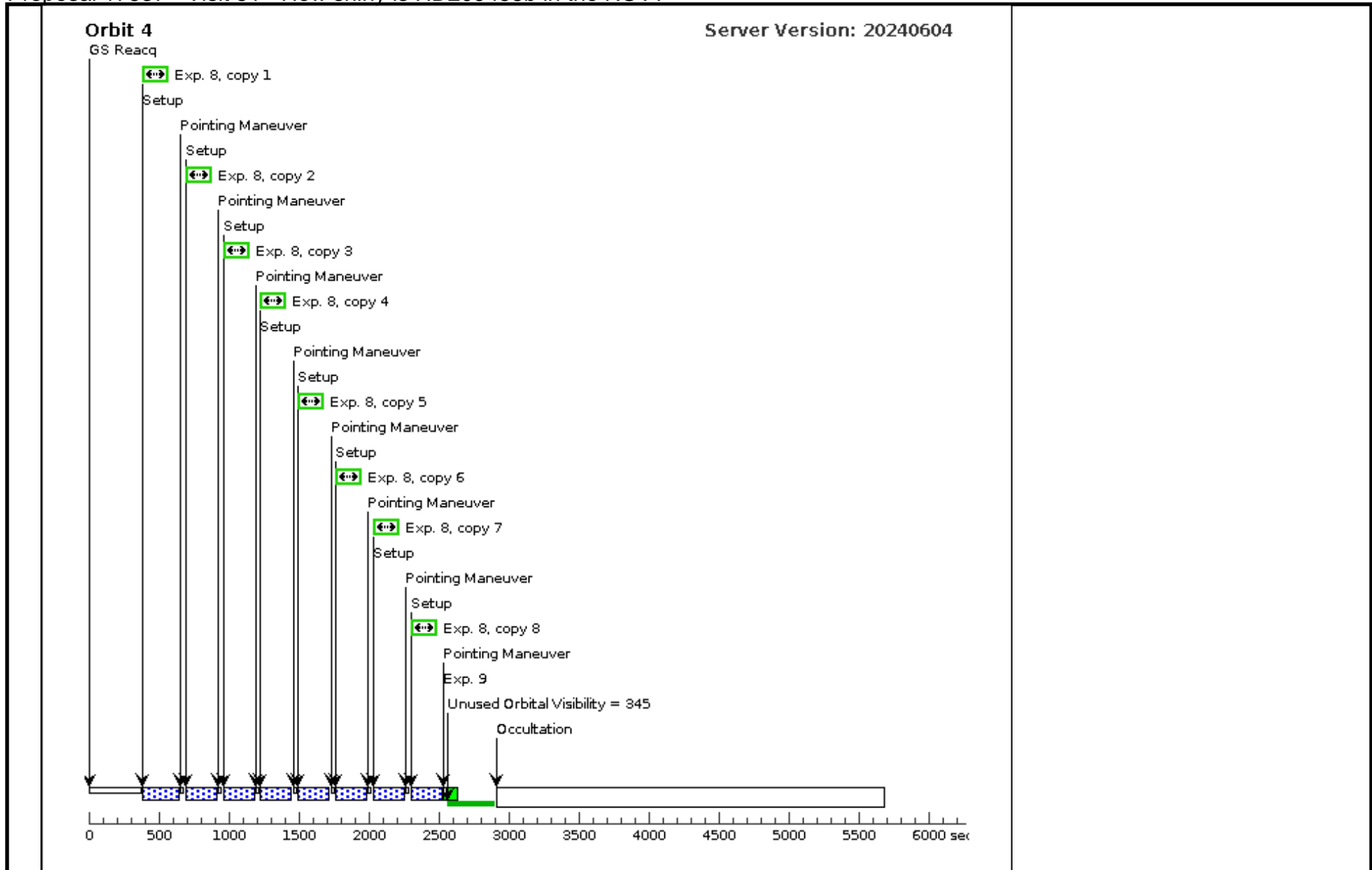
Orbit Structure

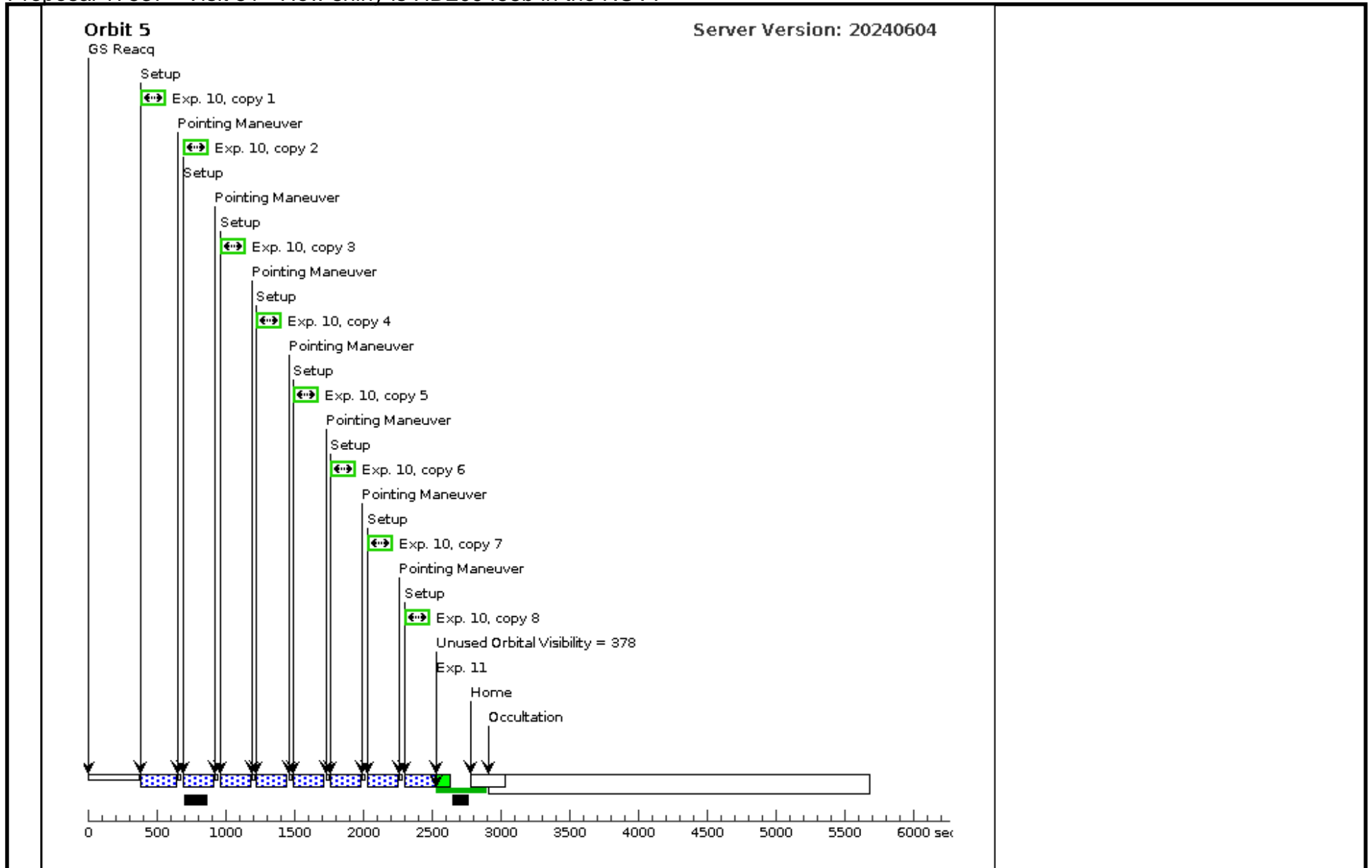
Orbit 1











Proposal 17537 - Visit 02 - How shiny is HD209458b in the NUV?

Visit	Proposal 17537, Visit 02, scheduling Tue Jul 16 19:01:21 GMT 2024 Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD Special Requirements: SCHED 100%; Period 3.52474859 D AND ZERO-PHASE HJD2455015.49844					
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes
(1)		HD-209458	RA: 22 03 10.8053 (330.7950221d) Dec: +18 53 3.27 (18.88424d) Equinox: J2000	Proper Motion RA: 0.0020972877496707944 sec of time/yr Proper Motion Dec: -0.017976000003727677 arcsec/yr Epoch of Position: 2015.5	V=7.63	Reference Frame: ICRS
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=STAR Description=[EXTRA-SOLAR PLANET, G III-I] Extended=NO						

Proposal 17537 - Visit 02 - How shiny is HD209458b in the NUV?

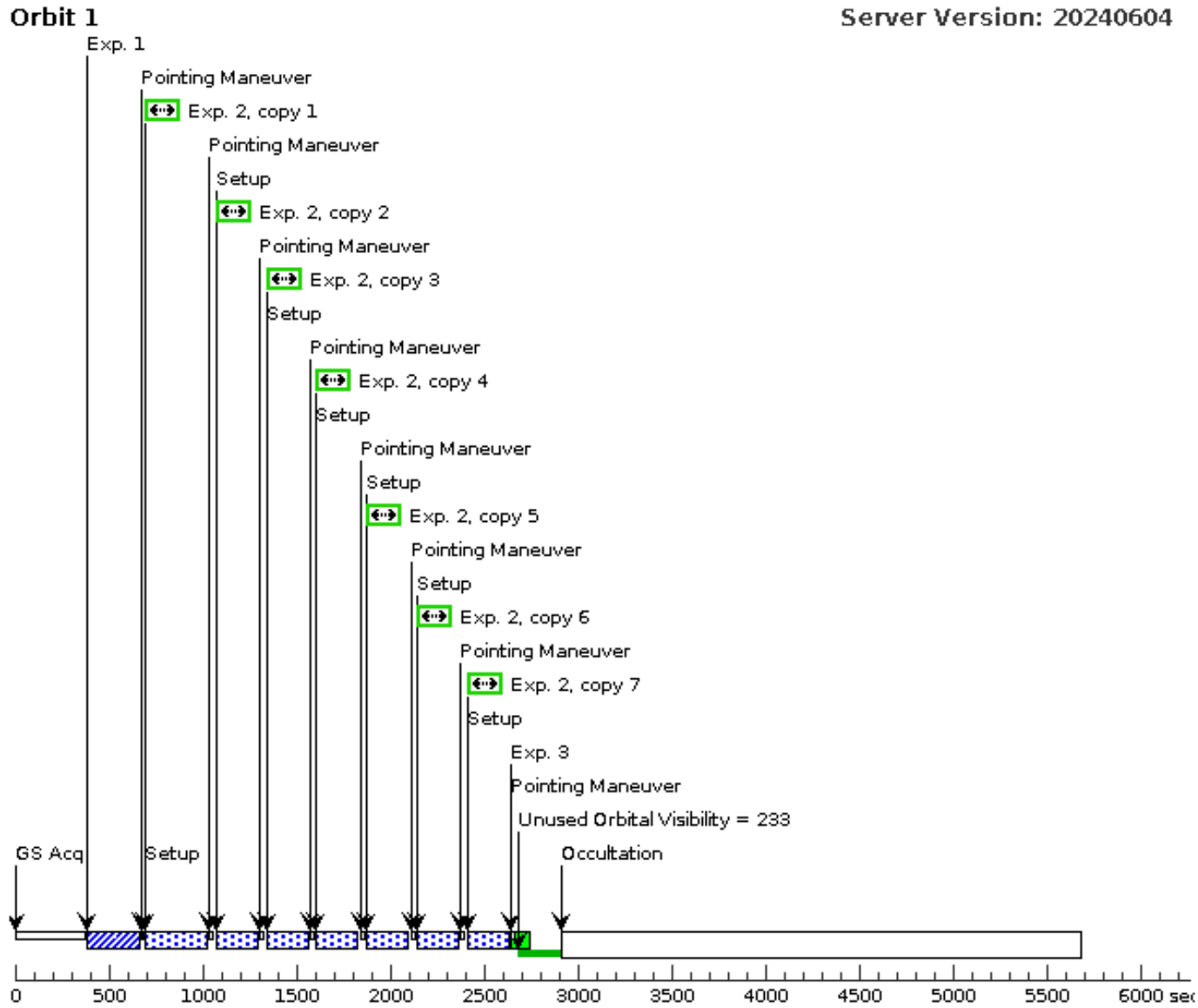
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(1891575)	(1) HD-209458	STIS/CCD, ACQ, F28X500III	MIRROR		PHASE 0.4527 TO 0.4586	Sequence 1-3 Non-Int in Visit 02	1 Secs (1 Secs) [==>]	[1]
2		(1) HD-209458	STIS/CCD, ACCUM, 52X2	G430L 4300 A	GAIN=4; CR-SPLIT=NO; WAVECAL=NO; SIZEAXIS2=512; CENTERAXIS2=513	POS TARG 0,-6; SPATIAL SCAN 0.0 625,90.0 Degrees,Forward	Sequence 1-3 Non-Int in Visit 02	194 Secs X 7 (1358 Secs) [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)] [==>(Copy 7)]	[1]
3	WAVECAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G430L 4300 A			Sequence 1-3 Non-Int in Visit 02	[==>]	[1]
4		(1) HD-209458	STIS/CCD, ACCUM, 52X2	G430L 4300 A	GAIN=4; CR-SPLIT=NO; WAVECAL=NO; CENTERAXIS2=513; SIZEAXIS2=512	POS TARG 0,-6; SPATIAL SCAN 0.0 625,90.0 Degrees,Forward	Sequence 4-5 Non-Int in Visit 02	194 Secs X 8 (1552 Secs) [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)] [==>(Copy 7)] [==>(Copy 8)]	[2]
5	WAVECAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G430L 4300 A			Sequence 4-5 Non-Int in Visit 02	[==>]	[2]
6		(1) HD-209458	STIS/CCD, ACCUM, 52X2	G430L 4300 A	GAIN=4; CR-SPLIT=NO; WAVECAL=NO; CENTERAXIS2=513; SIZEAXIS2=512	POS TARG 0,-6; SPATIAL SCAN 0.0 625,90.0 Degrees,Forward	Sequence 6-7 Non-Int in Visit 02	194 Secs X 8 (1552 Secs) [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)] [==>(Copy 7)] [==>(Copy 8)]	[3]
7	WAVECAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G430L 4300 A			Sequence 6-7 Non-Int in Visit 02	[==>]	[3]
8		(1) HD-209458	STIS/CCD, ACCUM, 52X2	G430L 4300 A	GAIN=4; CR-SPLIT=NO; WAVECAL=NO; CENTERAXIS2=513; SIZEAXIS2=512	POS TARG 0,-6; SPATIAL SCAN 0.0 625,90.0 Degrees,Forward	Sequence 8-9 Non-Int in Visit 02	194 Secs X 8 (1552 Secs) [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)] [==>(Copy 7)] [==>(Copy 8)]	[4]

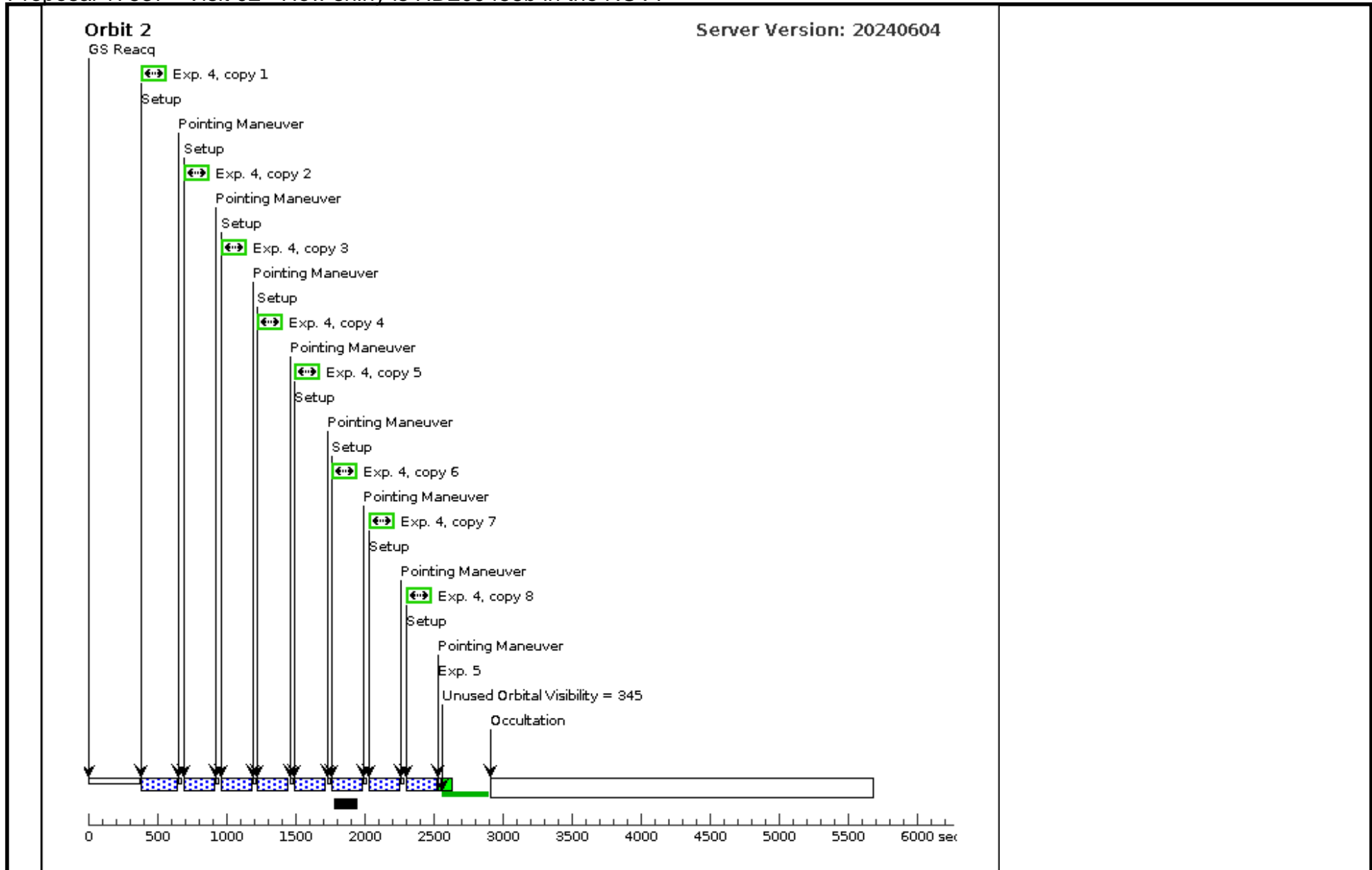
Exposures

Proposal 17537 - Visit 02 - How shiny is HD209458b in the NUV?

9	WAVECAL WAVE	STIS/CCD, ACCUM, 52X0.1	G430L 4300 A			Sequence 8-9 Non-Int in Visit 02	[==>]	[4]
10	(1) HD-209458	STIS/CCD, ACCUM, 52X2	G430L 4300 A	GAIN=4; CR-SPLIT=NO; WAVECAL=NO; CENTERAXIS2=513; SIZEAXIS2=512	POS TARG 0,-6; SPATIAL SCAN 0.0 625,90.0 Degrees, Forward	Sequence 10-11 Non-Int in Visit 02	194 Secs X 8 (1552 Secs) [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)] [==>(Copy 7)] [==>(Copy 8)]	[5]
11	WAVECAL WAVE	STIS/CCD, ACCUM, 52X0.1	G430L 4300 A			Sequence 10-11 Non-Int in Visit 02	[==>]	[5]

Orbit Structure





Orbit 3

