15838 - How hot is the inside of a young planet?

Cycle: 27, Proposal Category: GO

(UV Initiative)

(Availability Mode: AVAILABLE)

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) WASP-107 BIAS	WFC3/UVIS	4	11-Apr-2022 16:00:15.0	yes
02	(1) WASP-107 BIAS	WFC3/UVIS	4	11-Apr-2022 16:00:18.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
03	(1) WASP-107 BIAS	WFC3/UVIS	4	11-Apr-2022 16:00:20.0	yes
04	(1) WASP-107 BIAS	WFC3/UVIS	4	11-Apr-2022 16:00:23.0	yes

16 Total Orbits Used

ABSTRACT

We propose to test the following hypothesis: the gas-giant exoplanet WASP-107b is unusually inflated, and methane-depleted, because it is young, and therefore has a high internal temperature.

If this is correct, the temperature throughout its atmosphere should be high enough for sodium and potassium to be in the gas phase, and show absorption signatures in WASP-107b's transmission spectrum. We therefore propose to use measurements of sodium and potassium as thermometers of WASP-107b's internal temperature. Our proposed observations will also tell us whether or not a low C/O ratio is required to explain the methane depletion previously observed for WASP-107b. This is useful because C/O ratios can tell us where planets form in their protoplanetary disks. WASP-107b is an outstanding target for atmospheric characterisation, which, combined with its apparent youth, makes it an ideal exoplanet for linking planet formation and evolution theories to observations of its present-day atmosphere. This kind of atmospheric archaeology has so far been difficult for individual planets. HST is the only telescope that can achieve the required precision and wavelength coverage to achieve our science goals.

OBSERVING DESCRIPTION

We will use the WFC3 G280 grism to obtain spectra covering 2004 to 10000 Ang. We have estimated the exposure times using the STScI ETC, and will adopt 231 second exposures, which exposes the detector to 2/3 well- depth, resulting in a signal-to-noise per spectra of 4 to 500. As buffer dumps are an important issue with UVIS, we will use sub-arrays to increase duty cycle. Sub-array sizes of 500x1500 limits the overheads between exposures, and contains the entire useable spectrum. Using APT, we found 10 exposures-per-orbit can be obtained, and we will require 4-orbit long visits to measure both the transit and have sufficient baseline flux out of transit to characterize potential detector systematics.

Nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of chip 2, at an approximate XY position of (2048,1024).

SIZEAXIS1=1500 and SIZEAXIS2=500 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the target spectrum, which will be displaced from the direct image of the target by approximately +100 in X and +175 in Y. Therefore we set CENTERAXIS1 = 2048+100 = 2148 and CENTERAXIS2 = 1024 + 176 = 1200. These parameters are based upon similar observations obtained successfully in proposals 13574 and 15288.

Visit

Proposal 15838, Visit 01, completed Mon Apr 11 20:00:24 GMT 2022

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 314.4D TO 337.5 D; ORIENT 134.4D TO 157.5 D; ORIENT 354.1D TO 9.7 D; ORIENT 174.1D TO 189.7 D; ORIENT 29.6D TO 40.9 D; ORIENT 209.6D TO 220.9 D; ORIENT 54.7D TO 73.8 D; ORIENT 234.8D TO 253.8 D; ORIENT 102D TO 120.2 D; ORIENT 282D TO 300.2 D; Period 5.72149 D AND ZERO-PHASE HJD2457584.329746

Comments: Exposures of WASP-107 with F300X, and G280. The four visits consist of four orbits each with repeated exopsures on the same target and in the same position for each orbit. The first orbit of each visit contains the F300X direct image for wavelength calibration. Field positions are set to the reccommended position near the center of the second CCD chip (chip 2). As the only aperture allowed to be used with the G280 is the "UVIS", we must use POSTARGS to move the target to the chip center position. The nominal "UVIS" aperture puts the target 10" above the chip gap on chip 1. A Y-POSTARG of about 30" will put the target near the center of chip 1 and a Y-postarg of about -50" will put it near the center of chip 2 with a pixel position of (2048, 1026).

The optional parameters SIZEAXIS1=1500 and SIZEAXIS2=500 are used for all exposures to minimize the data volume and hence time lost to buffer dumps. This is fine for the data that needs to be obtained because the spectum of WASP-107b will occupy only a narrow swath of pixel rows within the field. This also requires the use of optional parameters CENTERAXIS1 and CENTERAXIS2 in order to "steer" the location of the subarray readout so that it is centered on the target spectrum. If we were positioning on chip 1 we could set CENTERAXIS2=TARGET. However, for the field center (nominal "UVIS" aperture) location on chip 2, we cannot center the subarray on the target because this would cause the subarray to extend into the chip gap, so we hardwire CENTERAXIS1=2148 and CENTERAXIS2=1200, which puts the vertical center of the subarray on the zeroth order of the target spectrum.

Chip 2 biases are taken at the end of the visit because the grism exposures use custom subarrays, which will not have matching biases from the WFC3 bias calibration program.

For each visit we have phase constraints around the event of the planetary transit, both the orbital period of the planet and the phasing needed are placed on the first exposure in the sequence for each visit.
As this target has a number of potential contamination sources we have placed Orient Ranges for the observations to reach our science goals.

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

(G280 reference image (F300X) subarray on chip2, phase constrained (01.001)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	WASP-107	RA: 12 33 32.7426 (188.3864275d) Dec: -10 08 46.37 (-10.14621d) Equinox: J2000	Proper Motion RA: -0.006545495650196717 sec of time/yr Proper Motion Dec: -0.00948299998526636 arcsec/yr Epoch of Position: 2015.5	V=11.47	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[EXTRA-SOLAR PLANETARY SYSTEM, K V-IV]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	G280 reference image (F300X) subarray on chip 2, phase constrained (WFC3UVIS.im.1370493)	(1) WASP-107	WFC3/UVIS, ACCUM, G280-REF	F300X	SIZEAXIS1=1500; SIZEAXIS2=500; CENTERAXIS1=2148; CENTERAXIS2=1200; FLASH=12	POS TARG 0.0,-50.0; PHASE 0.9747 TO 0.9773	Sequence 1-2 Non-Int in Visit 01	30 Secs (30 Secs) *[==>]*	***[1]***

Comments: The nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of subarray on chip 2, at an approximate XY position of (2048,1024).

SIZEAXIS1=1500 and SIZEAXIS2=500 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the target spectrum, which will be displaced from the direct image of the target. The zeroth order is expected to be about 175 pixels above the target in Y, and about 100 pixels to the right of the target in X. Therefore we set CENTERAXIS1 = 2048+100 = 2148 and CENTERAXIS2 = 1024 + 176 = 1200.

We set the AMP to D as in previously-sucessful campaigns. We use FLASH=12 to meet the nominal count level. These parameters are based upon similar observations obtained successfully in proposal 13574.

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
2	G280 image, chip2 (WFC3UVIS.sp.1370478)	(1) WASP-107	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 1-2 Non-Int in Visit 01	231 Secs X 9 (2079 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]*	***[1]***

Comments: Nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of subarray on chip 2.

SIZEAXIS1=2100 and SIZEAXIS2=800 are used to minimize data volume, while CENTERAXIS2 is used to center the subarray readout on the target location. The latter is set to 1026, to place the vertical center of the subarray on chip 2 where the target is positioned at (2048,1026) -50" in y below the nominal aperture (assuming each pixel = 0.04"). We set the AMP to D as in previous-sucessful campaigns. These parameters are based upon similar observations obtained successfully in proposal 13574.

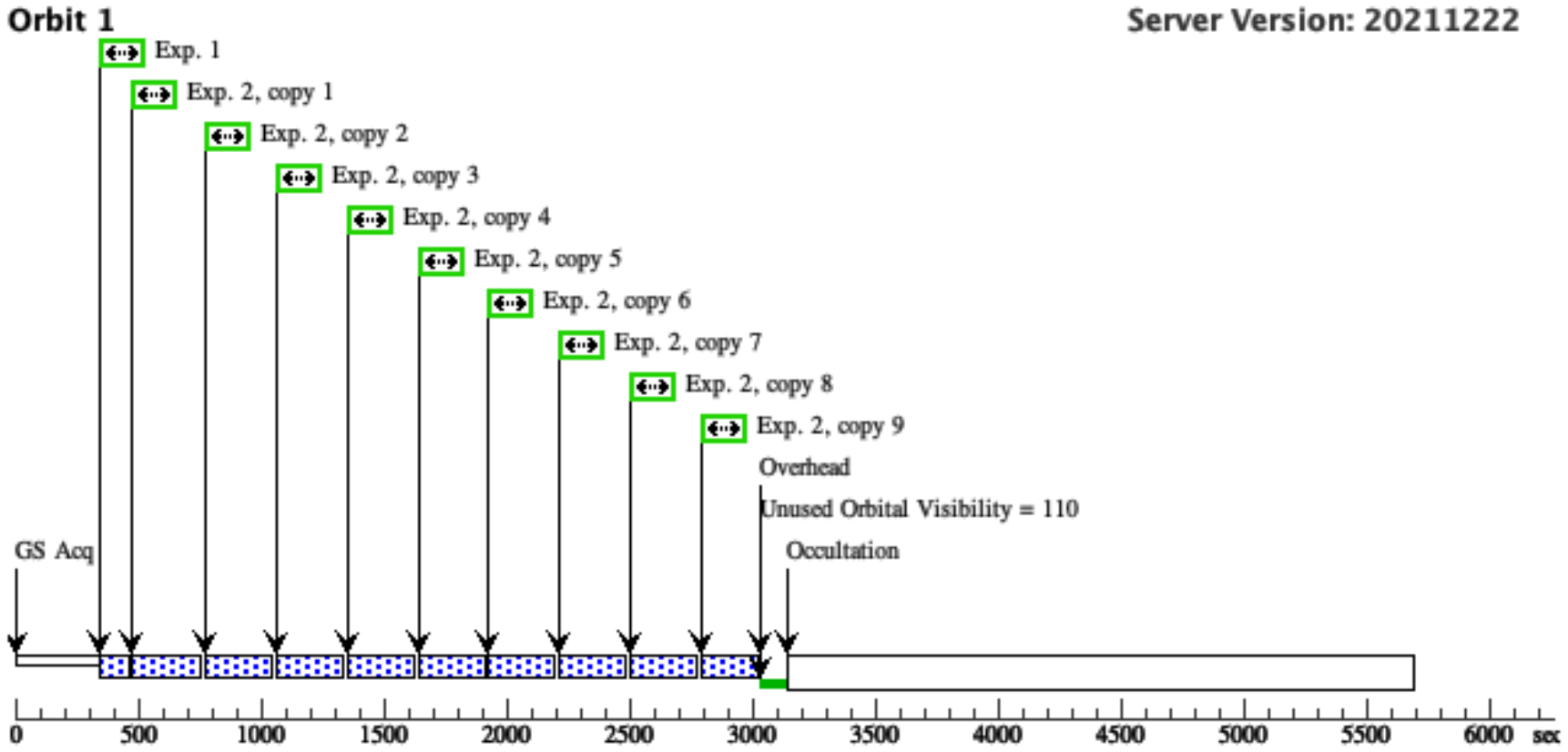
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
3	G280 image, chip2 (WFC3UVIS.sp.1370478)	(1) WASP-107	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; SIZEAXIS1=1500; CENTERAXIS2=1200; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 3-3 Non-Int in Visit 01	231 Secs X 10 (2310 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]*	***[2]***

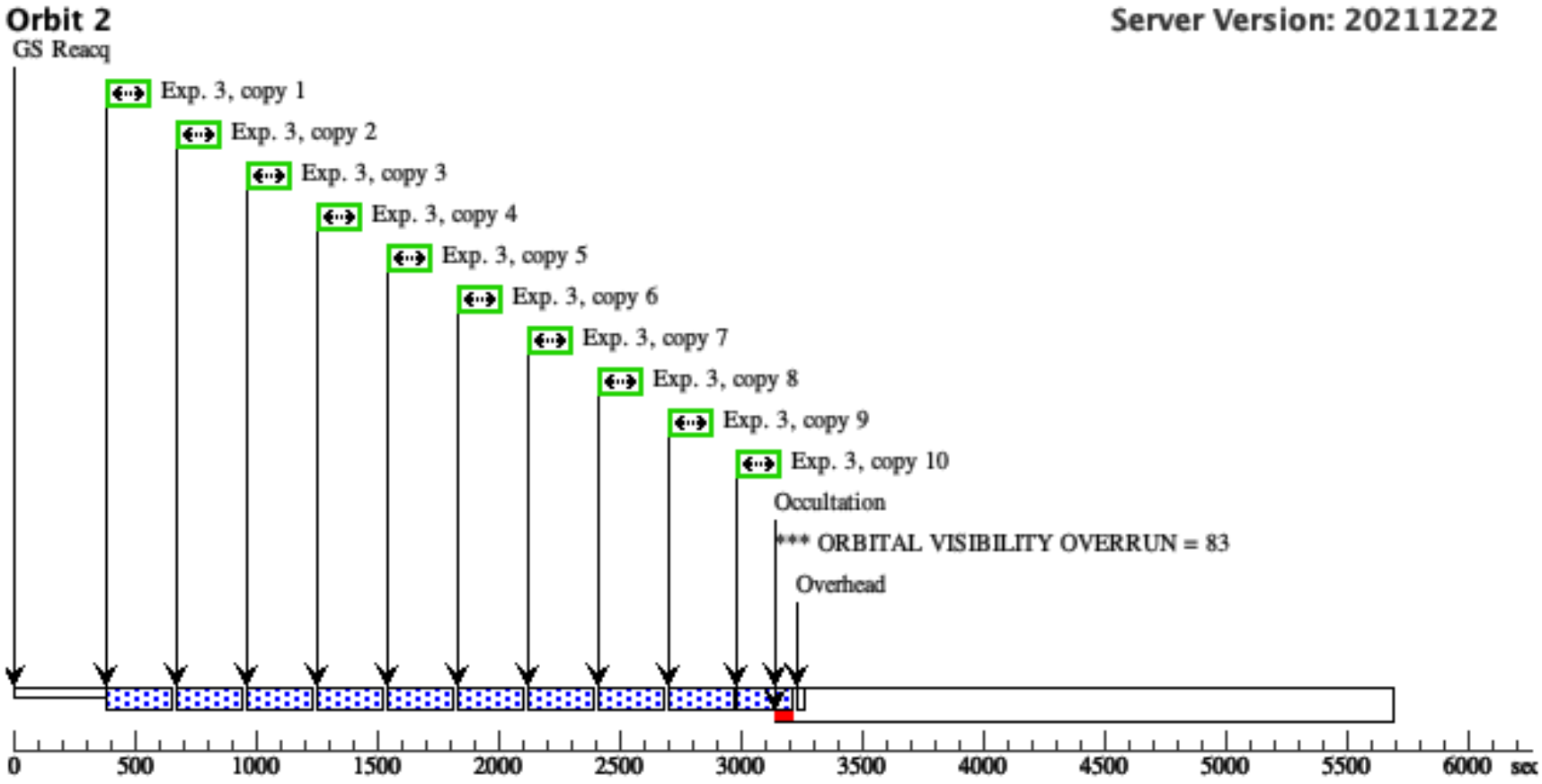
Comments: Nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of subarray on chip 2.

SIZEAXIS1=2100 and SIZEAXIS2=800 are used to minimize data volume, while CENTERAXIS2 is used to center the subarray readout on the target location. The latter is set to 1026, to place the vertical center of the subarray on chip 2 where the target is positioned at (2048,1026) -50" in y below the nominal aperture (assuming each pixel = 0.04"). We set the AMP to D as in previous-sucessful campaigns. These parameters are based upon similar observations obtained successfully in proposal 13574.

	4	G280 image, chip2 (WFC3UVIS.sp.1370478)	(1) WASP-107	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; SIZEAXIS1=1500; CENTERAXIS2=1200; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 4-4 Non-Int in Visit 01	231 Secs X 10 (2310 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]*	***[3]***
	Comments: Nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of subarray on chip 2. *SIZEAXIS1=2100 and SIZEAXIS2=800 are used to minimize data volume, while CENTERAXIS2 is used to center the subarray readout on the target location. The latter is set to 1026, to place the vertical center of the subarray on chip 2 where the target is positioned at (2048,1026) -50" in y below the nominal aperture (assuming each pixel = 0.04"). We set the AMP to D as in previous-sucessful campaigns. These parameters are based upon similar observations obtained successfully in proposal 13574.*									
	5	G280 image, chip2 (WFC3UVIS.sp.1370478)	(1) WASP-107	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; SIZEAXIS1=1500; CENTERAXIS2=1200; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 5-6 Non-Int in Visit 01	231 Secs X 10 (2310 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]*	***[4]***
	Comments: Nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of subarray on chip 2. *SIZEAXIS1=2100 and SIZEAXIS2=800 are used to minimize data volume, while CENTERAXIS2 is used to center the subarray readout on the target location. The latter is set to 1026, to place the vertical center of the subarray on chip 2 where the target is positioned at (2048,1026) -50" in y below the nominal aperture (assuming each pixel = 0.04"). We set the AMP to D as in previous-sucessful campaigns. These parameters are based upon similar observations obtained successfully in proposal 13574.*									
	6	Bias	BIAS	WFC3/UVIS, ACCUM, UVIS	DEF	SIZEAXIS1=1500; SIZEAXIS2=500; CENTERAXIS1=2048; CENTERAXIS2=1026		Sequence 5-6 Non-Int in Visit 01	0.0 Secs X 4 (0 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	***[4]***
	Comments: We set up the bias frames based on previously sucessful program 11934 and are using the same Aperture and subarray size and position as the observations for direct calibration.									

Orbit Structure

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Server Version: 20211222
GS Reacq
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Exp. 3, copy 7
Exp. 3, copy 8
Exp. 3, copy 9
Exp. 3, copy 10
Occultation
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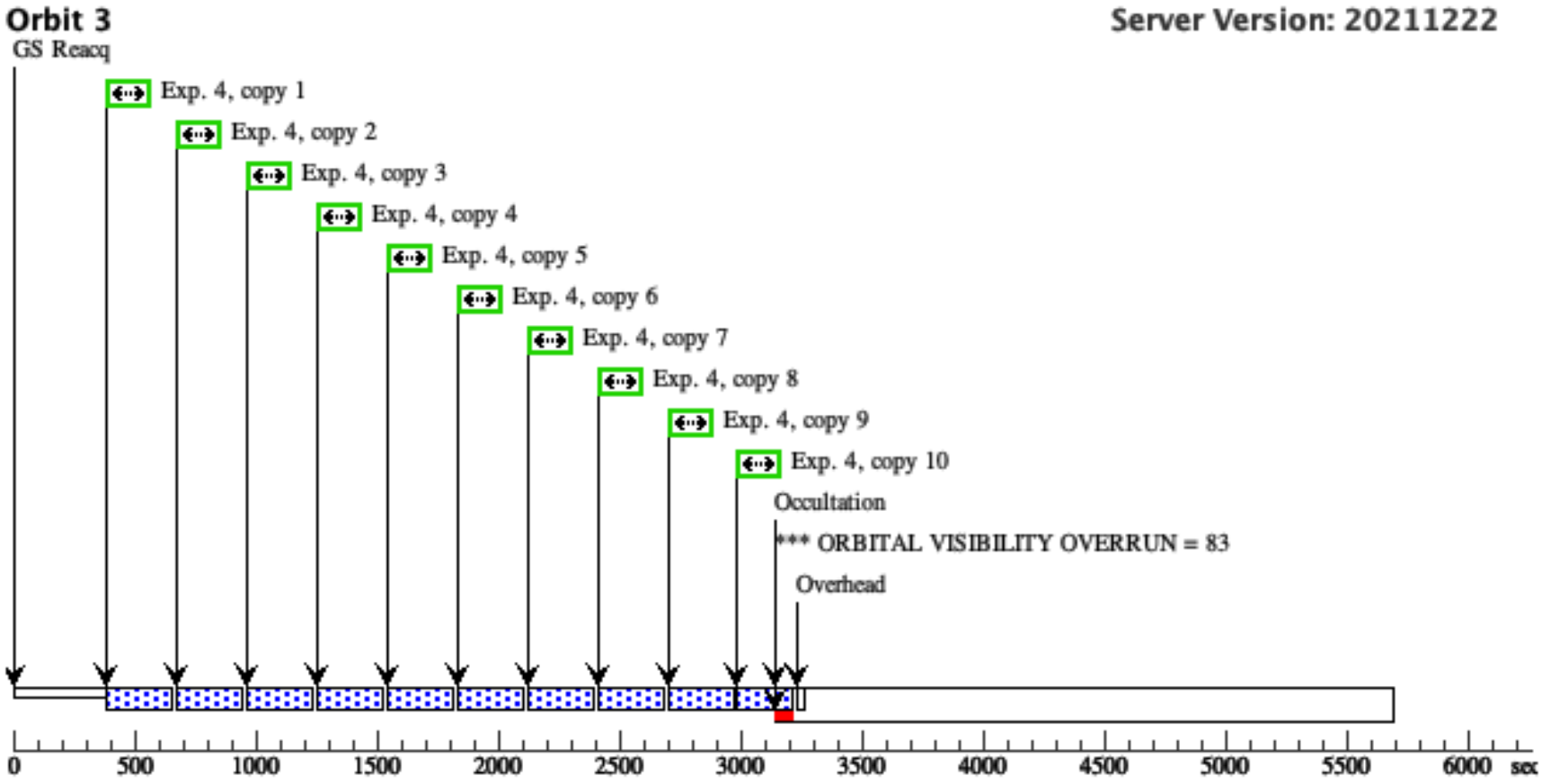
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec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GS Reacq
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Exp. 4, copy 2
Exp. 4, copy 3
Exp. 4, copy 4
Exp. 4, copy 5
Exp. 4, copy 6
Exp. 4, copy 7
Exp. 4, copy 8
Exp. 4, copy 9
Exp. 4, copy 10
Occultation
*** ORBITAL VISIBILITY OVERRUN = 83
Overhead
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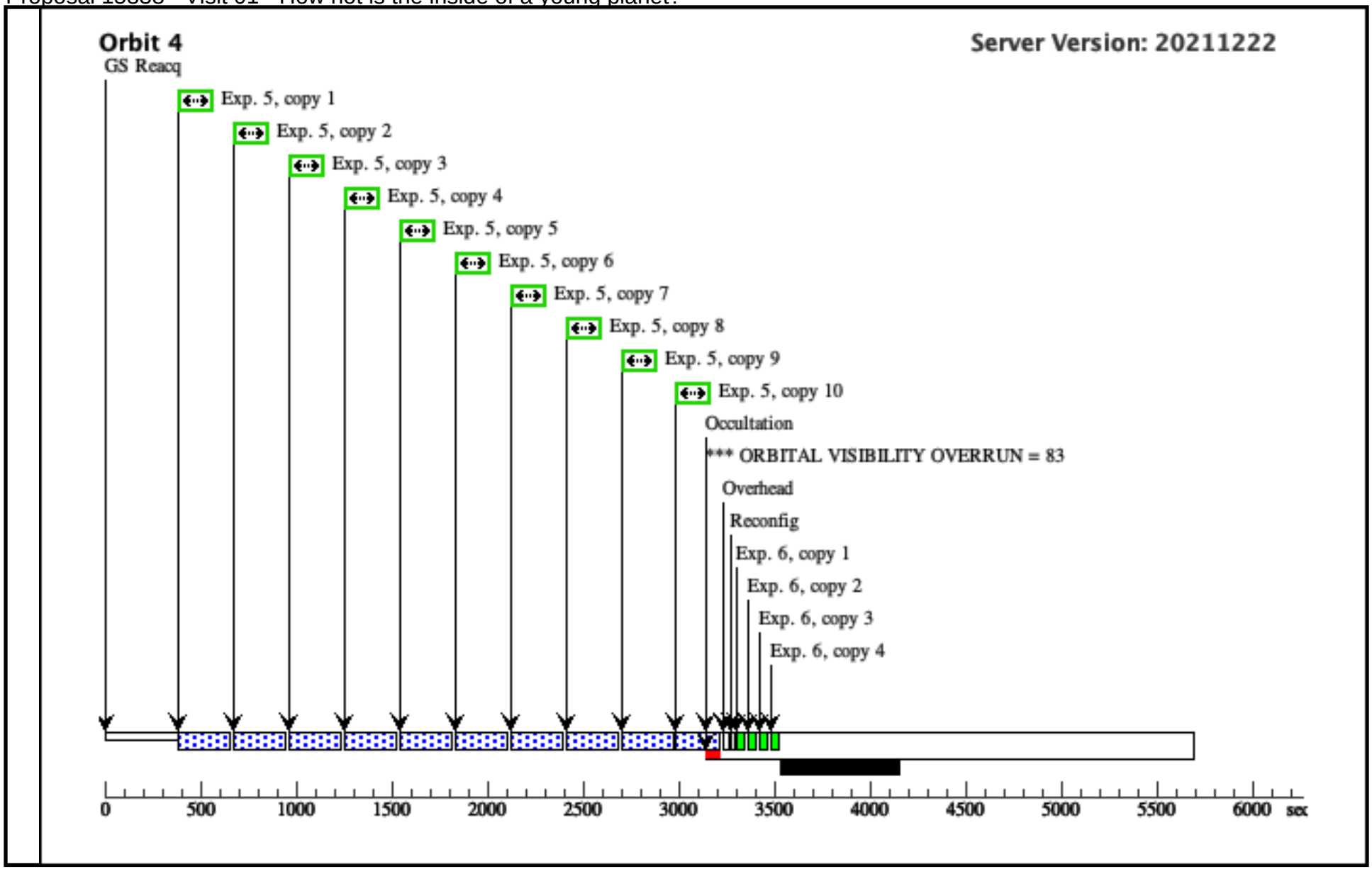
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec


Orbit 4
Server Version: 20211222
GS Reacq
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Exp. 5, copy 2
Exp. 5, copy 3
Exp. 5, copy 4
Exp. 5, copy 5
Exp. 5, copy 6
Exp. 5, copy 7
Exp. 5, copy 8
Exp. 5, copy 9
Exp. 5, copy 10
Occultation
*** ORBITAL VISIBILITY OVERRUN = 83
Overhead
Reconfig
Exp. 6, copy 1
Exp. 6, copy 2
Exp. 6, copy 3
Exp. 6, copy 4
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec

Visit

Proposal 15838, Visit 02, completed Mon Apr 11 20:00:24 GMT 2022

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 314.4D TO 337.5 D; ORIENT 134.4D TO 157.5 D; ORIENT 354.1D TO 9.7 D; ORIENT 174.1D TO 189.7 D; ORIENT 29.6D TO 40.9 D; ORIENT 209.6D TO 220.9 D; ORIENT 54.7D TO 73.8 D; ORIENT 234.8D TO 253.8 D; ORIENT 102D TO 120.2 D; ORIENT 282D TO 300.2 D; Period 5.72149 D AND ZERO-PHASE HJD2457584.329746

Comments: Exposures of WASP-107 with F300X, and G280. The four visits consist of four orbits each with repeated exopsures on the same target and in the same position for each orbit. The first orbit of each visit contains the F300X direct image for wavelength calibration. Field positions are set to the reccommended position near the center of the second CCD chip (chip 2). As the only aperture allowed to be used with the G280 is the "UVIS", we must use POSTARGS to move the target to the chip center position. The nominal "UVIS" aperture puts the target 10" above the chip gap on chip 1. A Y-POSTARG of about 30" will put the target near the center of chip 1 and a Y-postarg of about -50" will put it near the center of chip 2 with a pixel position of (2048, 1026).

The optional parameters SIZEAXIS1=1500 and SIZEAXIS2=500 are used for all exposures to minimize the data volume and hence time lost to buffer dumps. This is fine for the data that needs to be obtained because the spectum of WASP-107b will occupy only a narrow swath of pixel rows within the field. This also requires the use of optional parameters CENTERAXIS1 and CENTERAXIS2 in order to "steer" the location of the subarray readout so that it is centered on the target spectrum. If we were positioning on chip 1 we could set CENTERAXIS2=TARGET. However, for the field center (nominal "UVIS" aperture) location on chip 2, we cannot center the subarray on the target because this would cause the subarray to extend into the chip gap, so we hardwire CENTERAXIS1=2148 and CENTERAXIS2=1200, which puts the vertical center of the subarray on the zeroth order of the target spectrum.

Chip 2 biases are taken at the end of the visit because the grism exposures use custom subarrays, which will not have matching biases from the WFC3 bias calibration program.

For each visit we have phase constraints around the event of the planetary transit, both the orbital period of the planet and the phasing needed are placed on the first exposure in the sequence for each visit.
As this target has a number of potential contamination sources we have placed Orient Ranges for the observations to reach our science goals.

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

(G280 reference image (F300X) subarray on chip2, phase constrained (02.001)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	WASP-107	RA: 12 33 32.7426 (188.3864275d) Dec: -10 08 46.37 (-10.14621d) Equinox: J2000	Proper Motion RA: -0.006545495650196717 sec of time/yr Proper Motion Dec: -0.00948299998526636 arcsec/yr Epoch of Position: 2015.5	V=11.47	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[EXTRA-SOLAR PLANETARY SYSTEM, K V-IV]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	G280 reference image (F300X) subarray on chip 2, phase constrained (WFC3UVIS.im.1370493)	(1) WASP-107	WFC3/UVIS, ACCUM, G280-REF	F300X	SIZEAXIS1=1500; SIZEAXIS2=500; CENTERAXIS1=2148; CENTERAXIS2=1200; FLASH=12	POS TARG 0.0,-50.0; PHASE 0.9747 TO 0.9773	Sequence 1-2 Non-Int in Visit 02	30 Secs (30 Secs) *[==>]*	***[1]***

Comments: The nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of subarray on chip 2, at an approximate XY position of (2048,1024).

SIZEAXIS1=1500 and SIZEAXIS2=500 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the target spectrum, which will be displaced from the direct image of the target. The zeroth order is expected to be about 175 pixels above the target in Y, and about 100 pixels to the right of the target in X. Therefore we set CENTERAXIS1 = 2048+100 = 2148 and CENTERAXIS2 = 1024 + 176 = 1200.

We set the AMP to D as in previously-sucessful campaigns. We use FLASH=12 to meet the nominal count level. These parameters are based upon similar observations obtained successfully in proposal 13574.

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
2	G280 image, chip2 (WFC3UVIS.sp.1370478)	(1) WASP-107	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 1-2 Non-Int in Visit 02	231 Secs X 9 (2079 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]*	***[1]***

Comments: Nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of subarray on chip 2.

SIZEAXIS1=2100 and SIZEAXIS2=800 are used to minimize data volume, while CENTERAXIS2 is used to center the subarray readout on the target location. The latter is set to 1026, to place the vertical center of the subarray on chip 2 where the target is positioned at (2048,1026) -50" in y below the nominal aperture (assuming each pixel = 0.04"). We set the AMP to D as in previous-sucessful campaigns. These parameters are based upon similar observations obtained successfully in proposal 13574.

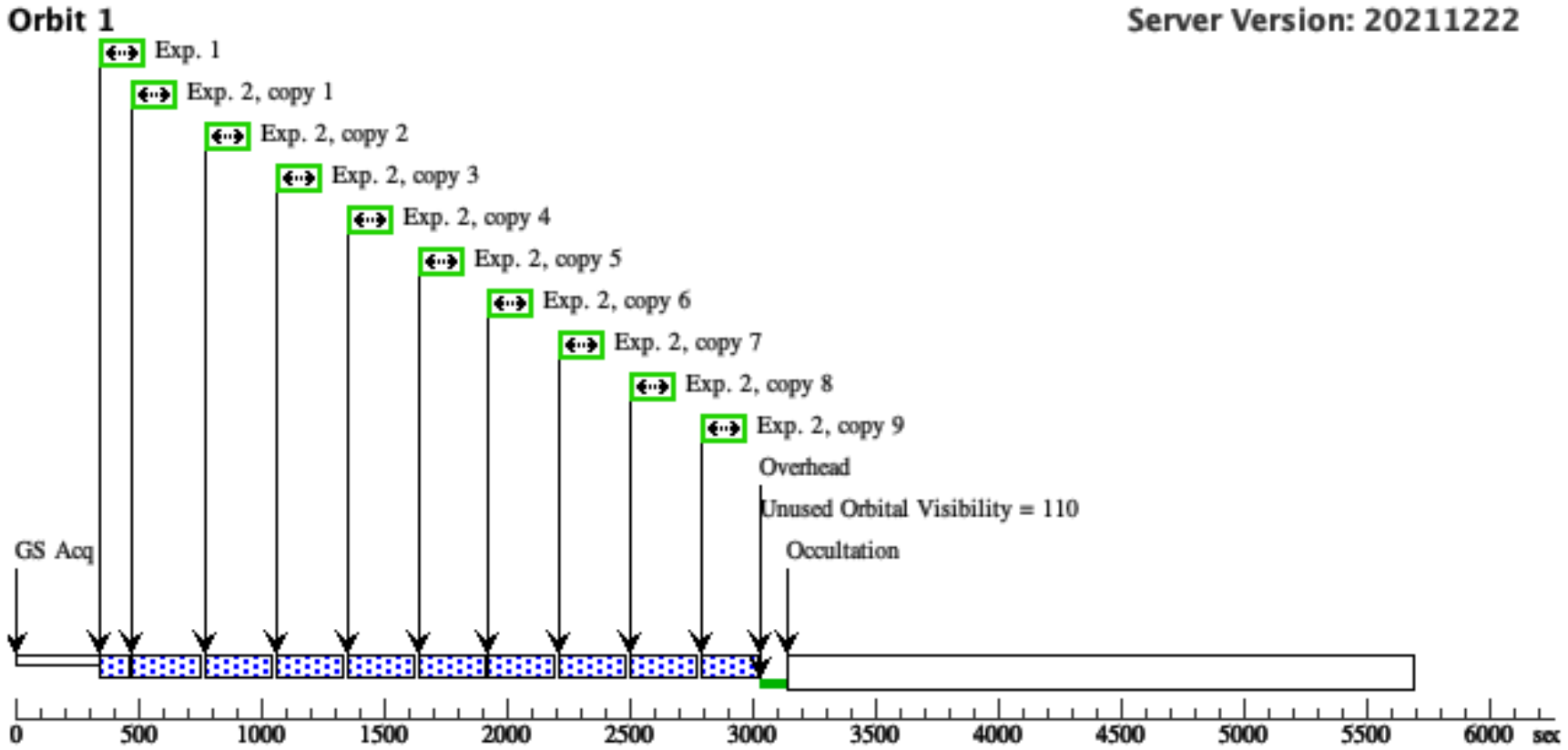
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
3	G280 image, chip2 (WFC3UVIS.sp.1370478)	(1) WASP-107	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; SIZEAXIS1=1500; CENTERAXIS2=1200; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 3-3 Non-Int in Visit 02	231 Secs X 10 (2310 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]*	***[2]***

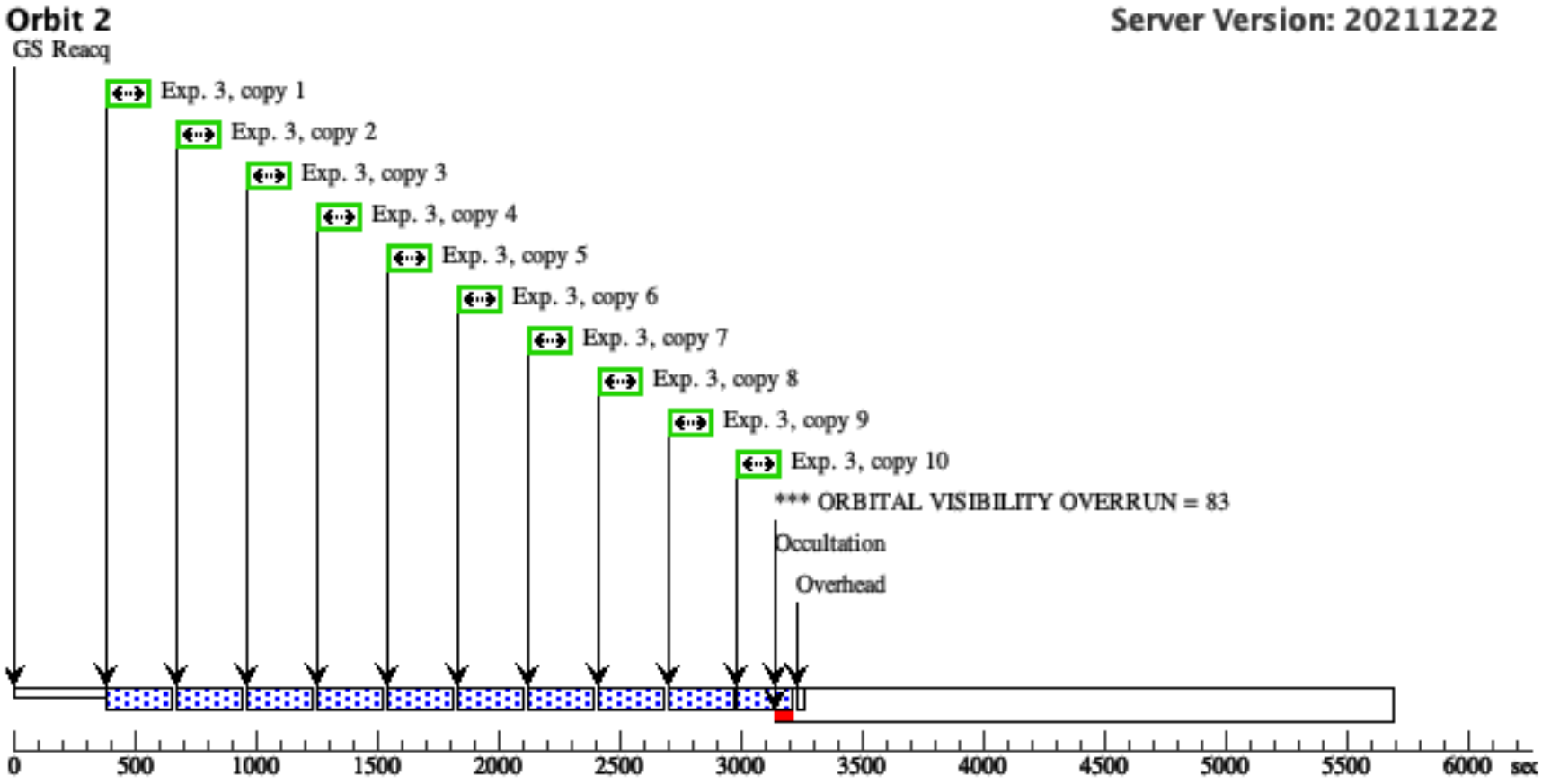
Comments: Nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of subarray on chip 2.

SIZEAXIS1=2100 and SIZEAXIS2=800 are used to minimize data volume, while CENTERAXIS2 is used to center the subarray readout on the target location. The latter is set to 1026, to place the vertical center of the subarray on chip 2 where the target is positioned at (2048,1026) -50" in y below the nominal aperture (assuming each pixel = 0.04"). We set the AMP to D as in previous-sucessful campaigns. These parameters are based upon similar observations obtained successfully in proposal 13574.

	4	G280 image, chip2 (WFC3UVIS.sp.1370478)	(1) WASP-107	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; SIZEAXIS1=1500; CENTERAXIS2=1200; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 4-4 Non-Int in Visit 02	231 Secs X 10 (2310 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]*	***[3]***
	Comments: Nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of subarray on chip 2. *SIZEAXIS1=2100 and SIZEAXIS2=800 are used to minimize data volume, while CENTERAXIS2 is used to center the subarray readout on the target location. The latter is set to 1026, to place the vertical center of the subarray on chip 2 where the target is positioned at (2048,1026) -50" in y below the nominal aperture (assuming each pixel = 0.04"). We set the AMP to D as in previous-sucessful campaigns. These parameters are based upon similar observations obtained successfully in proposal 13574.*									
	5	G280 image, chip2 (WFC3UVIS.sp.1370478)	(1) WASP-107	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; SIZEAXIS1=1500; CENTERAXIS2=1200; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 5-6 Non-Int in Visit 02	231 Secs X 10 (2310 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]*	***[4]***
	Comments: Nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of subarray on chip 2. *SIZEAXIS1=2100 and SIZEAXIS2=800 are used to minimize data volume, while CENTERAXIS2 is used to center the subarray readout on the target location. The latter is set to 1026, to place the vertical center of the subarray on chip 2 where the target is positioned at (2048,1026) -50" in y below the nominal aperture (assuming each pixel = 0.04"). We set the AMP to D as in previous-sucessful campaigns. These parameters are based upon similar observations obtained successfully in proposal 13574.*									
	6	Bias	BIAS	WFC3/UVIS, ACCUM, UVIS	DEF	SIZEAXIS1=1500; SIZEAXIS2=500; CENTERAXIS1=2048; CENTERAXIS2=1026		Sequence 5-6 Non-Int in Visit 02	0.0 Secs X 4 (0 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	***[4]***
	Comments: We set up the bias frames based on previously sucessful program 11934 and are using the same Aperture and subarray size and position as the observations for direct calibration.									

Orbit Structure

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GS Reacq
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Exp. 3, copy 3
Exp. 3, copy 4
Exp. 3, copy 5
Exp. 3, copy 6
Exp. 3, copy 7
Exp. 3, copy 8
Exp. 3, copy 9
Exp. 3, copy 10
*** ORBITAL VISIBILITY OVERRUN = 83
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3500
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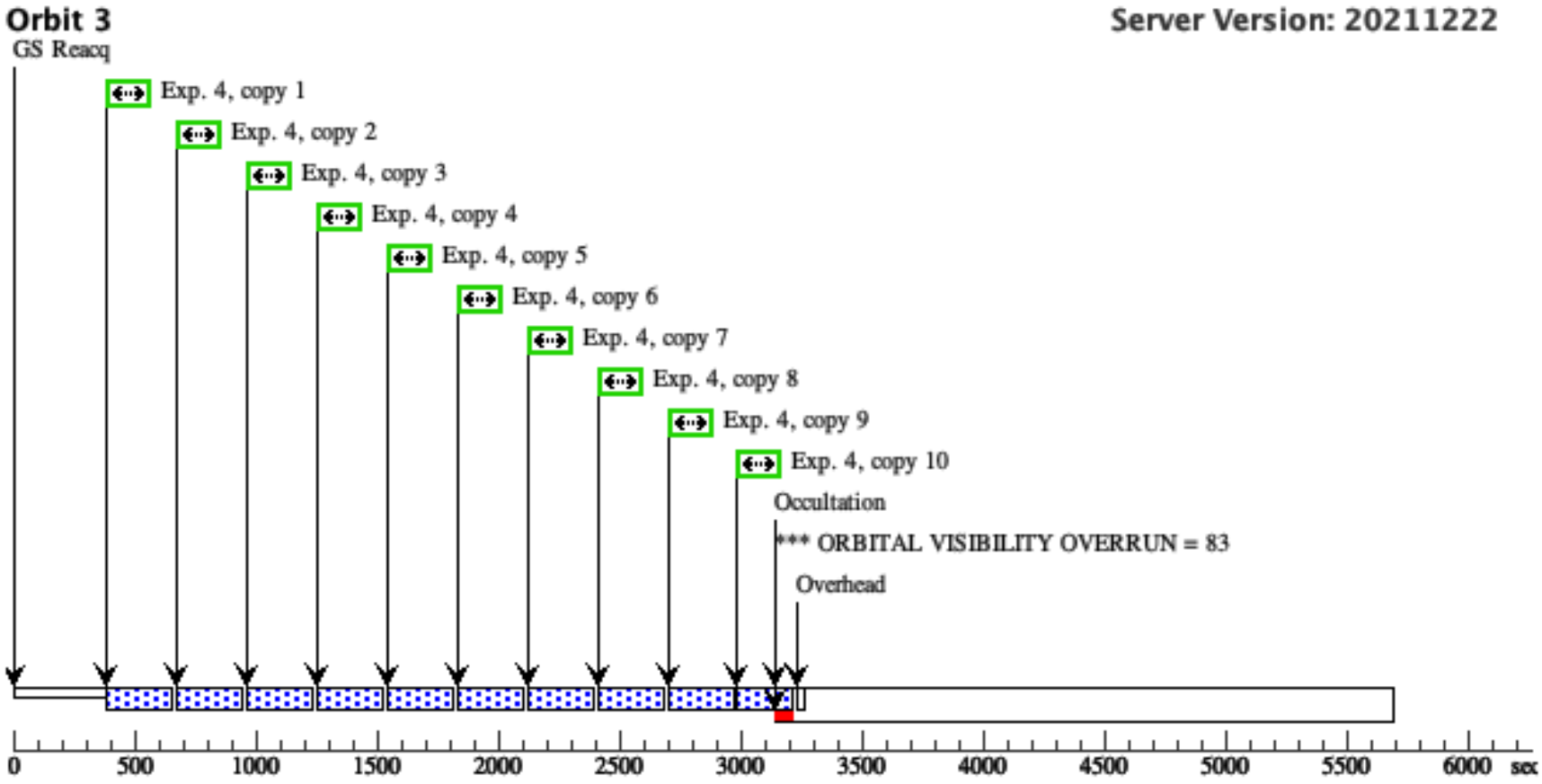
5000
5500
6000
sec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Server Version: 20211222
GS Reacq
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Exp. 4, copy 7
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Exp. 4, copy 9
Exp. 4, copy 10
Occultation
*** ORBITAL VISIBILITY OVERRUN = 83
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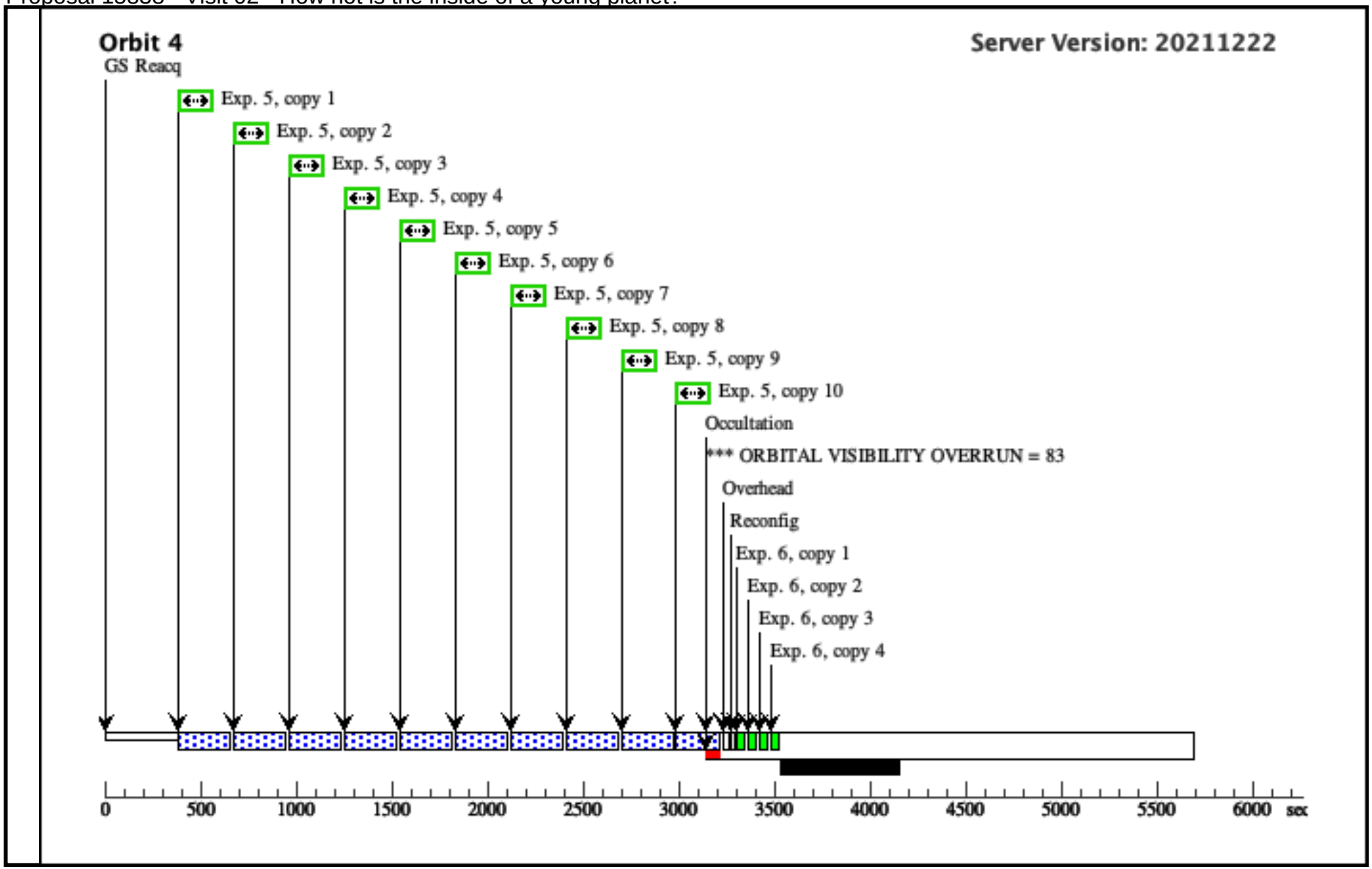
sec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Server Version: 20211222
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Exp. 5, copy 6
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Exp. 5, copy 8
Exp. 5, copy 9
Exp. 5, copy 10
Occultation
*** ORBITAL VISIBILITY OVERRUN = 83
Overhead
Reconfig
Exp. 6, copy 1
Exp. 6, copy 2
Exp. 6, copy 3
Exp. 6, copy 4
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500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec

Visit

Proposal 15838, Visit 03, completed Mon Apr 11 20:00:24 GMT 2022

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 314.4D TO 337.5 D; ORIENT 134.4D TO 157.5 D; ORIENT 354.1D TO 9.7 D; ORIENT 174.1D TO 189.7 D; ORIENT 29.6D TO 40.9 D; ORIENT 209.6D TO 220.9 D; ORIENT 54.7D TO 73.8 D; ORIENT 234.8D TO 253.8 D; ORIENT 102D TO 120.2 D; ORIENT 282D TO 300.2 D; Period 5.72149 D AND ZERO-PHASE HJD2457584.329746

Comments: Exposures of WASP-107 with F300X, and G280. The four visits consist of four orbits each with repeated exopsures on the same target and in the same position for each orbit. The first orbit of each visit contains the F300X direct image for wavelength calibration. Field positions are set to the reccommended position near the center of the second CCD chip (chip 2). As the only aperture allowed to be used with the G280 is the "UVIS", we must use POSTARGS to move the target to the chip center position. The nominal "UVIS" aperture puts the target 10" above the chip gap on chip 1. A Y-POSTARG of about 30" will put the target near the center of chip 1 and a Y-postarg of about -50" will put it near the center of chip 2 with a pixel position of (2048, 1026).

The optional parameters SIZEAXIS1=1500 and SIZEAXIS2=500 are used for all exposures to minimize the data volume and hence time lost to buffer dumps. This is fine for the data that needs to be obtained because the spectum of WASP-107b will occupy only a narrow swath of pixel rows within the field. This also requires the use of optional parameters CENTERAXIS1 and CENTERAXIS2 in order to "steer" the location of the subarray readout so that it is centered on the target spectrum. If we were positioning on chip 1 we could set CENTERAXIS2=TARGET. However, for the field center (nominal "UVIS" aperture) location on chip 2, we cannot center the subarray on the target because this would cause the subarray to extend into the chip gap, so we hardwire CENTERAXIS1=2148 and CENTERAXIS2=1200, which puts the vertical center of the subarray on the zeroth order of the target spectrum.

Chip 2 biases are taken at the end of the visit because the grism exposures use custom subarrays, which will not have matching biases from the WFC3 bias calibration program.

For each visit we have phase constraints around the event of the planetary transit, both the orbital period of the planet and the phasing needed are placed on the first exposure in the sequence for each visit.
As this target has a number of potential contamination sources we have placed Orient Ranges for the observations to reach our science goals.

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

(G280 reference image (F300X) subarray on chip2, phase constrained (03.001)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	WASP-107	RA: 12 33 32.7426 (188.3864275d) Dec: -10 08 46.37 (-10.14621d) Equinox: J2000	Proper Motion RA: -0.006545495650196717 sec of time/yr Proper Motion Dec: -0.00948299998526636 arcsec/yr Epoch of Position: 2015.5	V=11.47	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[EXTRA-SOLAR PLANETARY SYSTEM, K V-IV]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	G280 reference image (F300X) subarray on chip 2, phase constrained (WFC3UVIS.im.1370493)	(1) WASP-107	WFC3/UVIS, ACCUM, G280-REF	F300X	SIZEAXIS1=1500; SIZEAXIS2=500; CENTERAXIS1=2148; CENTERAXIS2=1200; FLASH=12	POS TARG 0.0,-50.0; PHASE 0.9747 TO 0.9773	Sequence 1-2 Non-Int in Visit 03	30 Secs (30 Secs) *[==>]*	***[1]***

Comments: The nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of subarray on chip 2, at an approximate XY position of (2048,1024).

SIZEAXIS1=1500 and SIZEAXIS2=500 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the target spectrum, which will be displaced from the direct image of the target. The zeroth order is expected to be about 175 pixels above the target in Y, and about 100 pixels to the right of the target in X. Therefore we set CENTERAXIS1 = 2048+100 = 2148 and CENTERAXIS2 = 1024 + 176 = 1200.

We set the AMP to D as in previously-sucessful campaigns. We use FLASH=12 to meet the nominal count level. These parameters are based upon similar observations obtained successfully in proposal 13574.

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
2	G280 image, chip2 (WFC3UVIS.sp.1370478)	(1) WASP-107	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 1-2 Non-Int in Visit 03	231 Secs X 9 (2079 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]*	***[1]***

Comments: Nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of subarray on chip 2.

SIZEAXIS1=2100 and SIZEAXIS2=800 are used to minimize data volume, while CENTERAXIS2 is used to center the subarray readout on the target location. The latter is set to 1026, to place the vertical center of the subarray on chip 2 where the target is positioned at (2048,1026) -50" in y below the nominal aperture (assuming each pixel = 0.04"). We set the AMP to D as in previous-sucessful campaigns. These parameters are based upon similar observations obtained successfully in proposal 13574.

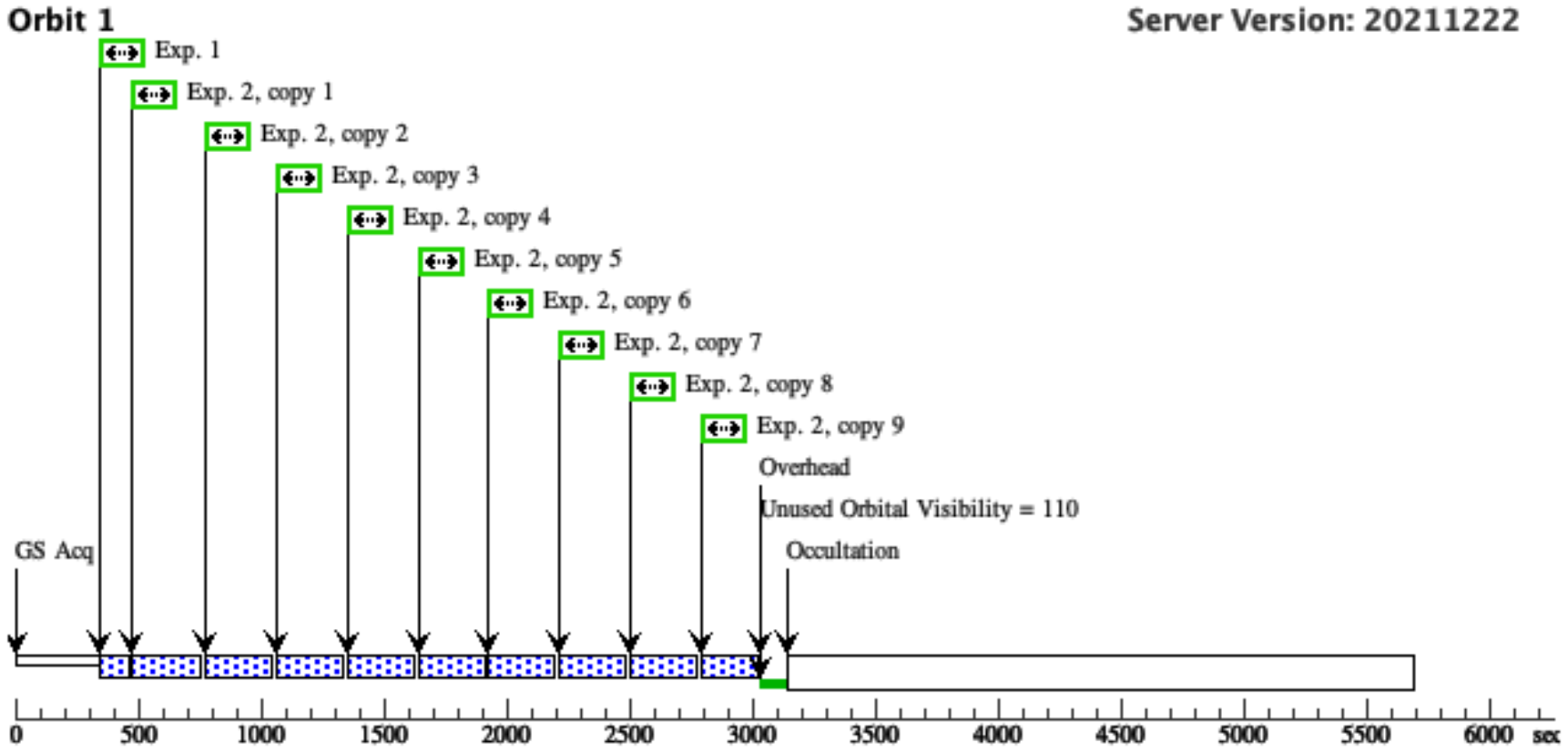
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
3	G280 image, chip2 (WFC3UVIS.sp.1370478)	(1) WASP-107	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; SIZEAXIS1=1500; CENTERAXIS2=1200; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 3-3 Non-Int in Visit 03	231 Secs X 10 (2310 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]*	***[2]***

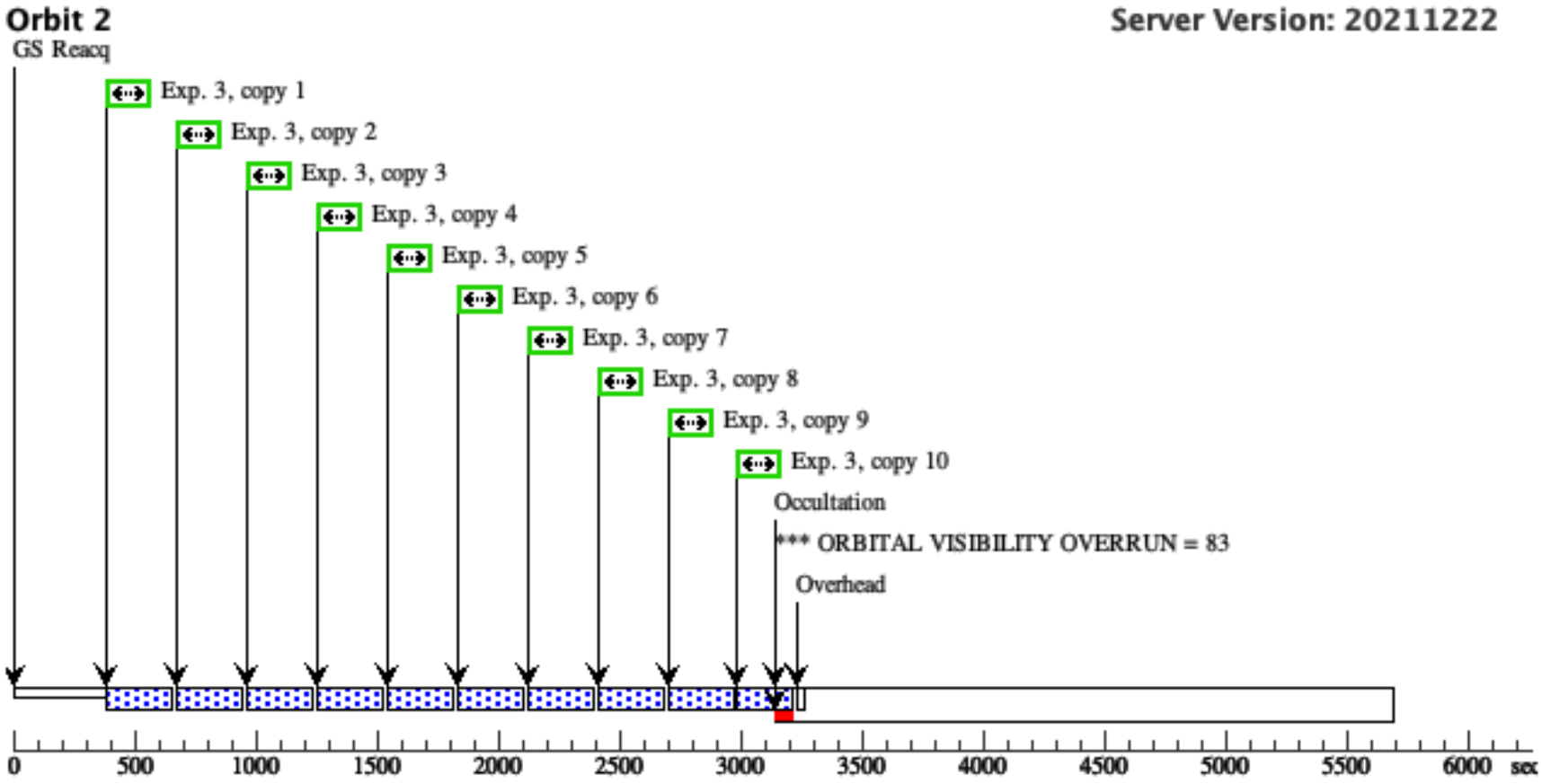
Comments: Nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of subarray on chip 2.

SIZEAXIS1=2100 and SIZEAXIS2=800 are used to minimize data volume, while CENTERAXIS2 is used to center the subarray readout on the target location. The latter is set to 1026, to place the vertical center of the subarray on chip 2 where the target is positioned at (2048,1026) -50" in y below the nominal aperture (assuming each pixel = 0.04"). We set the AMP to D as in previous-sucessful campaigns. These parameters are based upon similar observations obtained successfully in proposal 13574.

	4	G280 image, (1) WASP-107 chip2 (WFC3UVIS.sp.1370478)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; SIZEAXIS1=1500; CENTERAXIS2=1200; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 4-4 Non-Int in Visit 03	231 Secs X 10 (2310 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]*	***[3]***
	Comments: Nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of subarray on chip 2. *SIZEAXIS1=2100 and SIZEAXIS2=800 are used to minimize data volume, while CENTERAXIS2 is used to center the subarray readout on the target location. The latter is set to 1026, to place the vertical center of the subarray on chip 2 where the target is positioned at (2048,1026) -50" in y below the nominal aperture (assuming each pixel = 0.04"). We set the AMP to D as in previous-sucessful campaigns. These parameters are based upon similar observations obtained successfully in proposal 13574.*								
	5	G280 image, (1) WASP-107 chip2 (WFC3UVIS.sp.1370478)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; SIZEAXIS1=1500; CENTERAXIS2=1200; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 5-6 Non-Int in Visit 03	231 Secs X 10 (2310 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]*	***[4]***
	Comments: Nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of subarray on chip 2. *SIZEAXIS1=2100 and SIZEAXIS2=800 are used to minimize data volume, while CENTERAXIS2 is used to center the subarray readout on the target location. The latter is set to 1026, to place the vertical center of the subarray on chip 2 where the target is positioned at (2048,1026) -50" in y below the nominal aperture (assuming each pixel = 0.04"). We set the AMP to D as in previous-sucessful campaigns. These parameters are based upon similar observations obtained successfully in proposal 13574.*								
	6	Bias	BIAS	WFC3/UVIS, ACCUM, UVIS	DEF	SIZEAXIS1=1500; SIZEAXIS2=500; CENTERAXIS1=2048; CENTERAXIS2=1026		Sequence 5-6 Non-Int in Visit 03	0.0 Secs X 4 (0 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	***[4]***
	Comments: We set up the bias frames based on previously sucessful program 11934 and are using the same Aperture and subarray size and position as the observations for direct calibration.								

Orbit Structure

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Exp. 3, copy 8
Exp. 3, copy 9
Exp. 3, copy 10
Occultation
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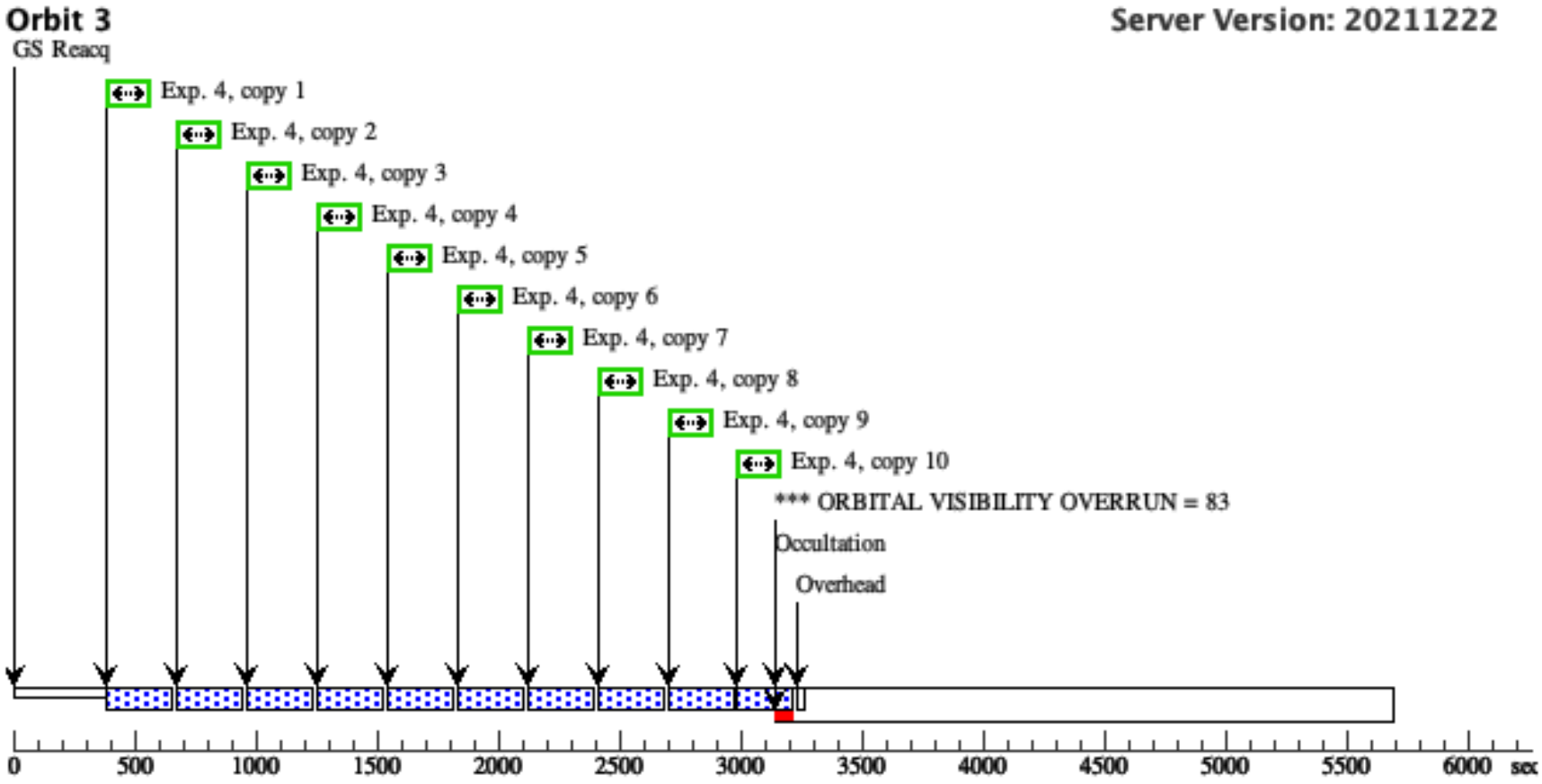
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Server Version: 20211222
GS Reacq
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Exp. 4, copy 6
Exp. 4, copy 7
Exp. 4, copy 8
Exp. 4, copy 9
Exp. 4, copy 10
*** ORBITAL VISIBILITY OVERRUN = 83
Occultation
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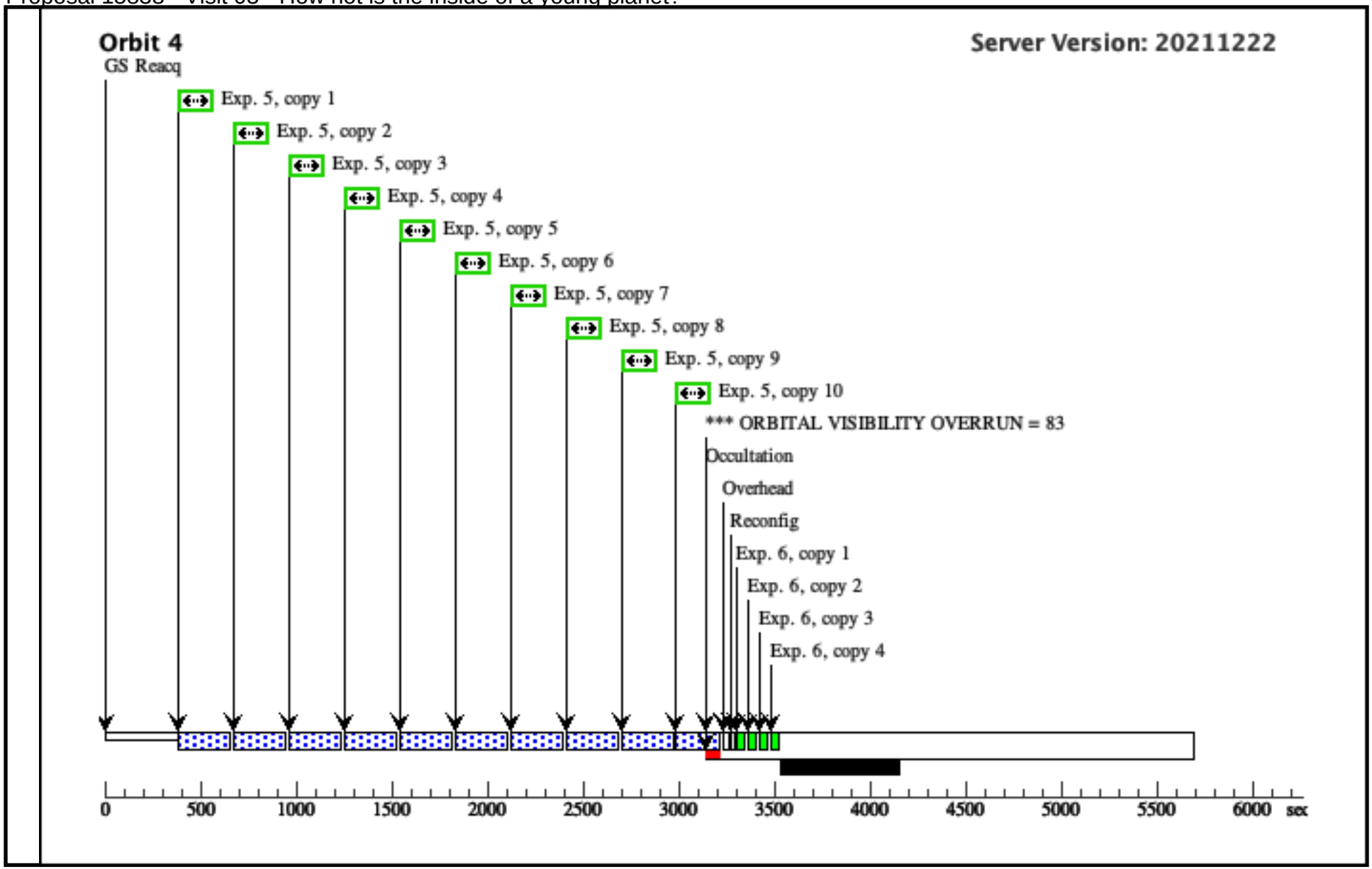
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Exp. 5, copy 9
Exp. 5, copy 10
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Overhead
Reconfig
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sec

Visit

Proposal 15838, Visit 04, implementation Mon Apr 11 20:00:24 GMT 2022

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 314.4D TO 337.5 D; ORIENT 134.4D TO 157.5 D; ORIENT 354.1D TO 9.7 D; ORIENT 174.1D TO 189.7 D; ORIENT 29.6D TO 40.9 D; ORIENT 209.6D TO 220.9 D; ORIENT 54.7D TO 73.8 D; ORIENT 234.8D TO 253.8 D; ORIENT 102D TO 120.2 D; ORIENT 282D TO 300.2 D; Period 5.72149 D AND ZERO-PHASE HJD2457584.329746

Comments: Exposures of WASP-107 with F300X, and G280. The four visits consist of four orbits each with repeated exopsures on the same target and in the same position for each orbit. The first orbit of each visit contains the F300X direct image for wavelength calibration. Field positions are set to the reccommended position near the center of the second CCD chip (chip 2). As the only aperture allowed to be used with the G280 is the "UVIS", we must use POSTARGS to move the target to the chip center position. The nominal "UVIS" aperture puts the target 10" above the chip gap on chip 1. A Y-POSTARG of about 30" will put the target near the center of chip 1 and a Y-postarg of about -50" will put it near the center of chip 2 with a pixel position of (2048, 1026).

The optional parameters SIZEAXIS1=1500 and SIZEAXIS2=500 are used for all exposures to minimize the data volume and hence time lost to buffer dumps. This is fine for the data that needs to be obtained because the spectum of WASP-107b will occupy only a narrow swath of pixel rows within the field. This also requires the use of optional parameters CENTERAXIS1 and CENTERAXIS2 in order to "steer" the location of the subarray readout so that it is centered on the target spectrum. If we were positioning on chip 1 we could set CENTERAXIS2=TARGET. However, for the field center (nominal "UVIS" aperture) location on chip 2, we cannot center the subarray on the target because this would cause the subarray to extend into the chip gap, so we hardwire CENTERAXIS1=2148 and CENTERAXIS2=1200, which puts the vertical center of the subarray on the zeroth order of the target spectrum.

Chip 2 biases are taken at the end of the visit because the grism exposures use custom subarrays, which will not have matching biases from the WFC3 bias calibration program.

For each visit we have phase constraints around the event of the planetary transit, both the orbital period of the planet and the phasing needed are placed on the first exposure in the sequence for each visit.
As this target has a number of potential contamination sources we have placed Orient Ranges for the observations to reach our science goals.

Diagnostics

(G280 reference image (F300X) subarray on chip2, phase constrained (04.001)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(G280 image, chip2 (04.002)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(G280 image, chip2 (04.003)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(G280 image, chip2 (04.004)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(G280 image, chip2 (04.005)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	WASP-107	RA: 12 33 32.7426 (188.3864275d) Dec: -10 08 46.37 (-10.14621d) Equinox: J2000	Proper Motion RA: -0.006545495650196717 sec of time/yr Proper Motion Dec: -0.00948299998526636 arcsec/yr Epoch of Position: 2015.5	V=11.47	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[EXTRA-SOLAR PLANETARY SYSTEM, K V-IV]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	G280 reference image (F300X) subarray on chip 2, phase constrained (WFC3UVIS.im.1370493)	(1) WASP-107	WFC3/UVIS, ACCUM, G280-REF	F300X	SIZEAXIS1=1500; SIZEAXIS2=500; CENTERAXIS1=2148; CENTERAXIS2=1200; FLASH=12	POS TARG 0.0,-50.0; PHASE 0.9747 TO 0.9773	Sequence 1-2 Non-Int in Visit 04	30 Secs (30 Secs) *[==>]*	***[1]***

Comments: The nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of subarray on chip 2, at an approximate XY position of (2048,1024).

SIZEAXIS1=1500 and SIZEAXIS2=500 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the target spectrum, which will be displaced from the direct image of the target. The zeroth order is expected to be about 175 pixels above the target in Y, and about 100 pixels to the right of the target in X. Therefore we set CENTERAXIS1 = 2048+100 = 2148 and CENTERAXIS2 = 1024 + 176 = 1200.

We set the AMP to D as in previously-sucessful campaigns. We use FLASH=12 to meet the nominal count level. These parameters are based upon similar observations obtained successfully in proposal 13574.

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
2	G280 image, chip2 (WFC3UVIS.sp.1744318)	(1) WASP-107	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 1-2 Non-Int in Visit 04	222 Secs X 9 (1998 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]*	***[1]***

Comments: Nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of subarray on chip 2.

SIZEAXIS1=2100 and SIZEAXIS2=800 are used to minimize data volume, while CENTERAXIS2 is used to center the subarray readout on the target location. The latter is set to 1026, to place the vertical center of the subarray on chip 2 where the target is positioned at (2048,1026) -50" in y below the nominal aperture (assuming each pixel = 0.04"). We set the AMP to D as in previous-sucessful campaigns. These parameters are based upon similar observations obtained successfully in proposal 13574.

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
3	G280 image, chip2 (WFC3UVIS.sp.1744318)	(1) WASP-107	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; SIZEAXIS1=1500; CENTERAXIS2=1200; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 3-3 Non-Int in Visit 04	222 Secs X 10 (2220 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]*	***[2]***

Comments: Nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of subarray on chip 2.

SIZEAXIS1=2100 and SIZEAXIS2=800 are used to minimize data volume, while CENTERAXIS2 is used to center the subarray readout on the target location. The latter is set to 1026, to place the vertical center of the subarray on chip 2 where the target is positioned at (2048,1026) -50" in y below the nominal aperture (assuming each pixel = 0.04"). We set the AMP to D as in previous-sucessful campaigns. These parameters are based upon similar observations obtained successfully in proposal 13574.

4	G280 image, chip2 (WFC3UVIS.sp.1744318)	(1) WASP-107	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; SIZEAXIS1=1500; CENTERAXIS2=1200; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 4-4 Non-Int in Visit 04	222 Secs X 10 (2220 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]*	***[3]***

Comments: Nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of subarray on chip 2.

SIZEAXIS1=2100 and SIZEAXIS2=800 are used to minimize data volume, while CENTERAXIS2 is used to center the subarray readout on the target location. The latter is set to 1026, to place the vertical center of the subarray on chip 2 where the target is positioned at (2048,1026) -50" in y below the nominal aperture (assuming each pixel = 0.04"). We set the AMP to D as in previous-sucessful campaigns. These parameters are based upon similar observations obtained successfully in proposal 13574.

5	G280 image, chip2 (WFC3UVIS.sp.1744318)	(1) WASP-107	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; SIZEAXIS1=1500; CENTERAXIS2=1200; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 5-6 Non-Int in Visit 04	222 Secs X 10 (2220 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]*	***[4]***

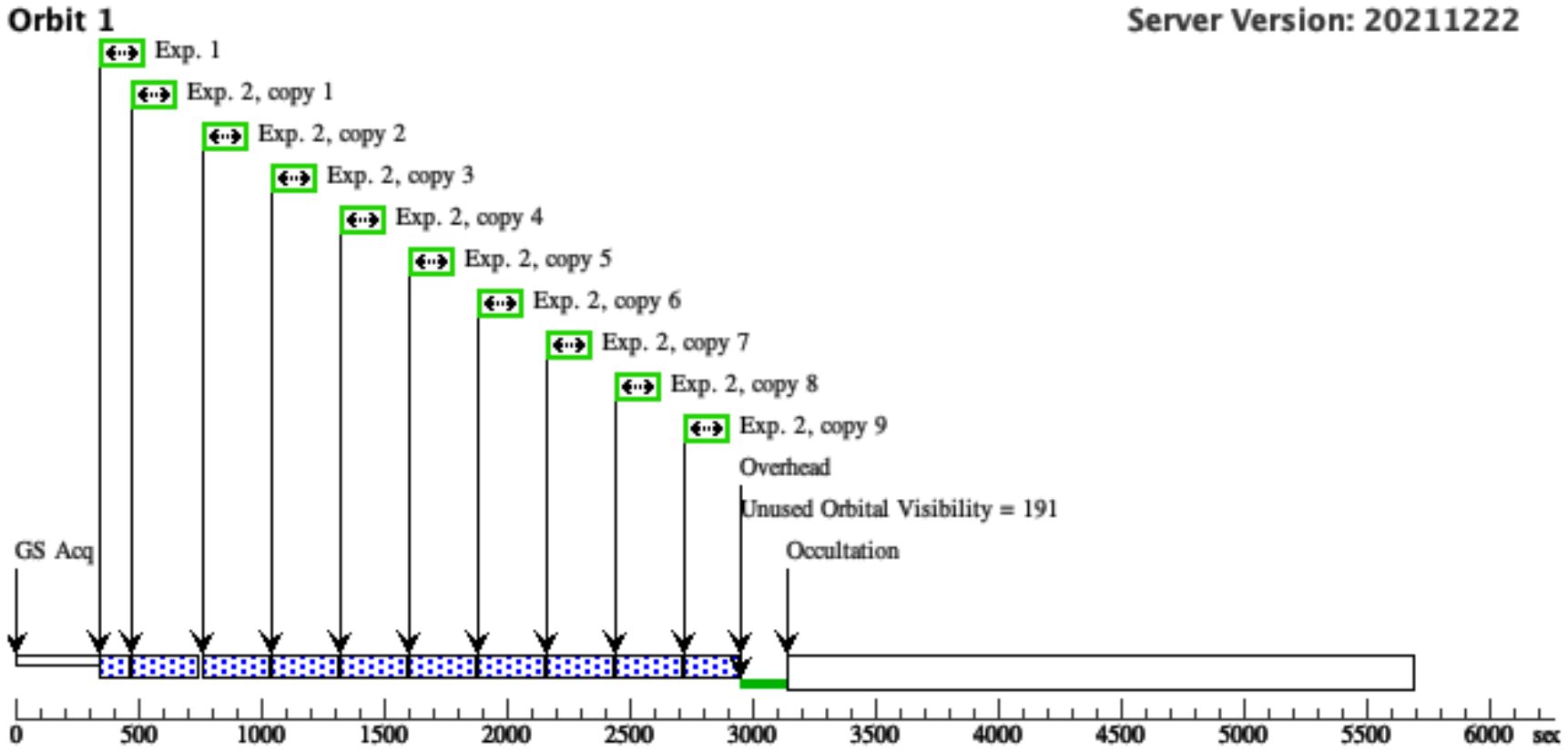
Comments: Nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of subarray on chip 2.

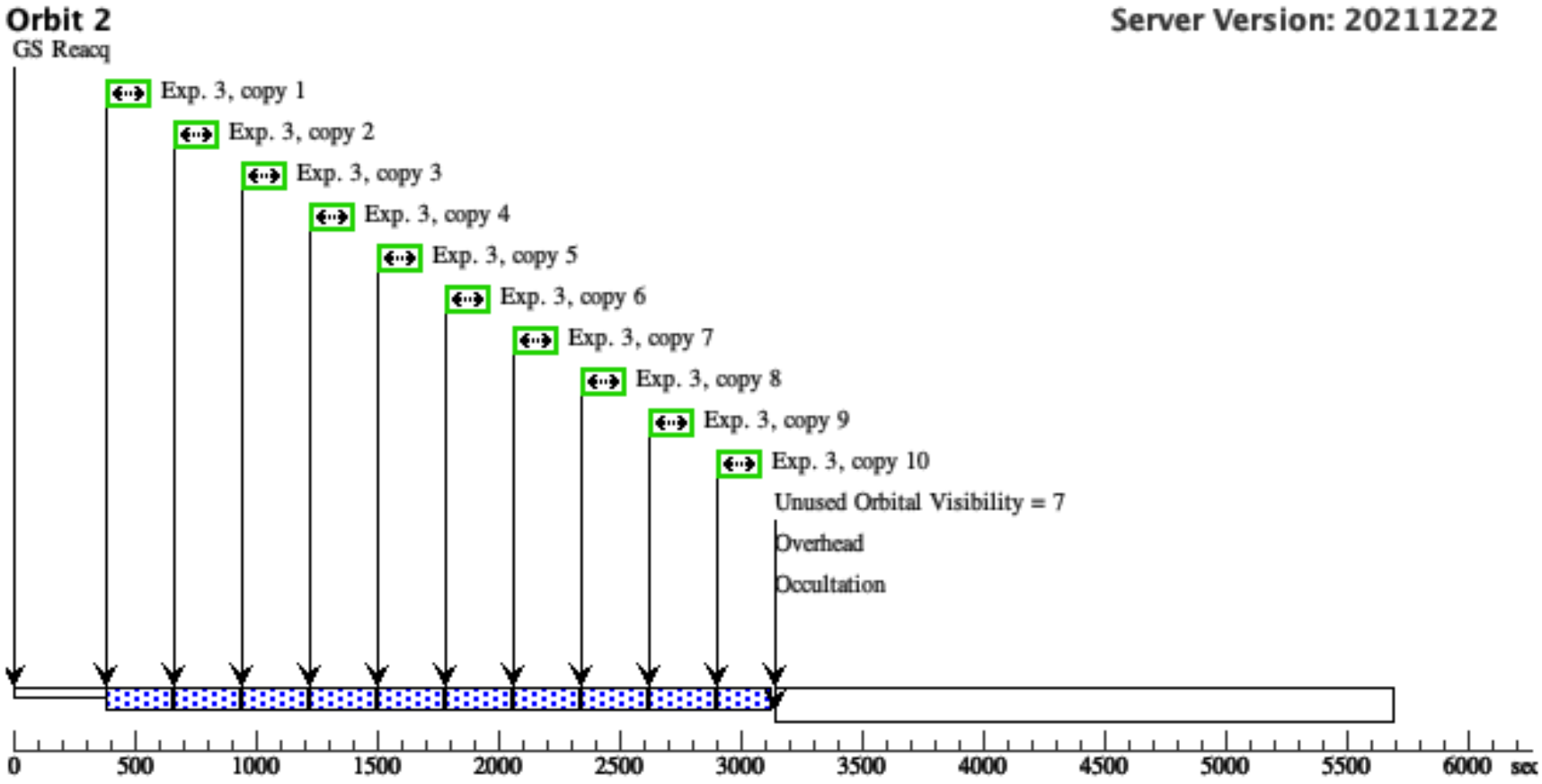
SIZEAXIS1=2100 and SIZEAXIS2=800 are used to minimize data volume, while CENTERAXIS2 is used to center the subarray readout on the target location. The latter is set to 1026, to place the vertical center of the subarray on chip 2 where the target is positioned at (2048,1026) -50" in y below the nominal aperture (assuming each pixel = 0.04"). We set the AMP to D as in previous-sucessful campaigns. These parameters are based upon similar observations obtained successfully in proposal 13574.

6	Bias	BIAS	WFC3/UVIS, ACCUM, UVIS	DEF	SIZEAXIS1=1500; SIZEAXIS2=500; CENTERAXIS1=2048; CENTERAXIS2=1026		Sequence 5-6 Non-Int in Visit 04	0.0 Secs X 4 (0 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	***[4]***

Comments: We set up the bias frames based on previously sucessful program 11934 and are using the same Aperture and subarray size and position as the observations for direct calibration.

Orbit Structure

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Exp. 3, copy 7
Exp. 3, copy 8
Exp. 3, copy 9
Exp. 3, copy 10
Unused Orbital Visibility = 7
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Occultation
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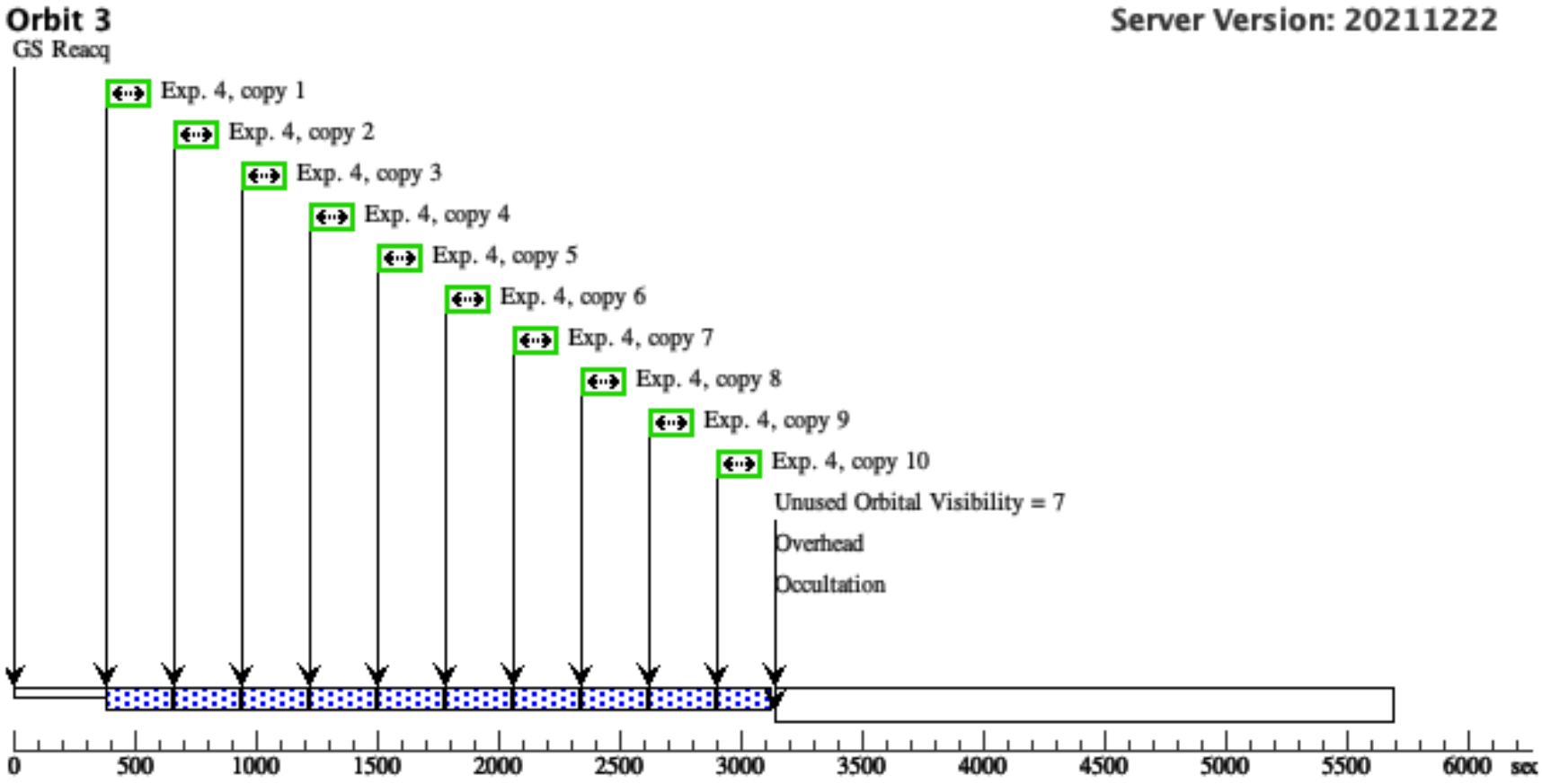
sec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Exp. 4, copy 6
Exp. 4, copy 7
Exp. 4, copy 8
Exp. 4, copy 9
Exp. 4, copy 10
Unused Orbital Visibility = 7
Overhead
Occultation
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1000
1500
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2500
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3500
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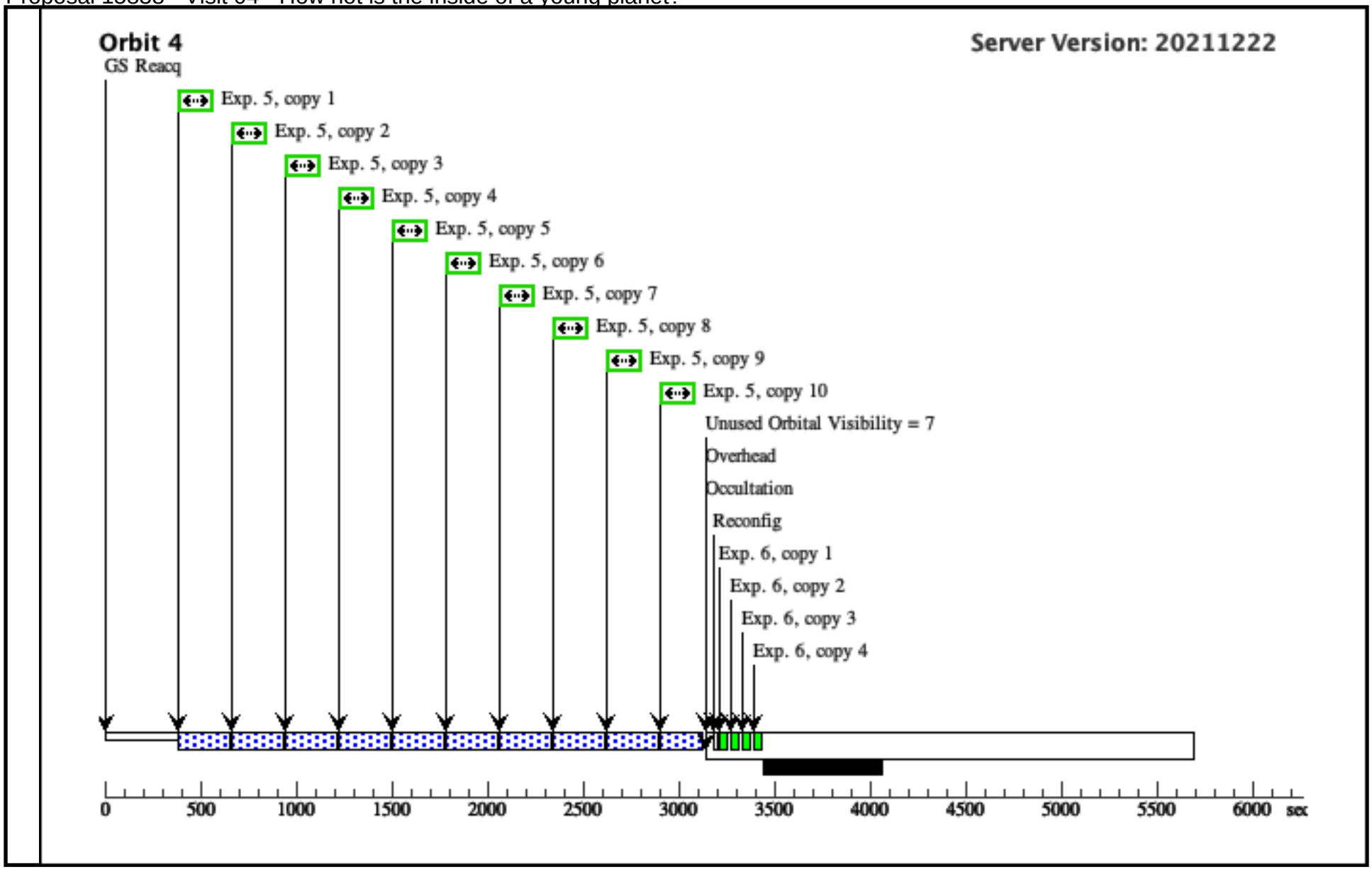
sec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Exp. 5, copy 4
Exp. 5, copy 5
Exp. 5, copy 6
Exp. 5, copy 7
Exp. 5, copy 8
Exp. 5, copy 9
Exp. 5, copy 10
Unused Orbital Visibility = 7
Overhead
Occultation
Reconfig
Exp. 6, copy 1
Exp. 6, copy 2
Exp. 6, copy 3
Exp. 6, copy 4
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sec