16736 - A Comparative Study of Planetary Atmospheres in Low-Metallicity Environments

Cycle: 29, 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-98 BIAS	WFC3/UVIS	4	23-Aug-2022 16:00:16.0	yes
02	(1) WASP-98 BIAS	WFC3/UVIS	4	23-Aug-2022 16:00:19.0	yes
03	(1) WASP-98	WFC3/IR	1	23-Aug-2022 16:00:21.0	yes
04	(1) WASP-98	WFC3/IR	1	23-Aug-2022 16:00:22.0	yes
05	(1) WASP-98	WFC3/IR	1	23-Aug-2022 16:00:24.0	yes
06	(1) WASP-98	WFC3/IR	1	23-Aug-2022 16:00:25.0	yes
07	(2) HAT-P-24 BIAS	WFC3/UVIS	5	23-Aug-2022 16:00:28.0	yes
57	(2) HAT-P-24 BIAS	WFC3/UVIS	5	23-Aug-2022 16:00:31.0	yes
15	(2) HAT-P-24 BIAS	WFC3/UVIS	5	23-Aug-2022 16:00:34.0	yes
10	(2) HAT-P-24	WFC3/IR	1	23-Aug-2022 16:00:36.0	yes
11	(2) HAT-P-24	WFC3/IR	1	23-Aug-2022 16:00:37.0	yes
12	(2) HAT-P-24	WFC3/IR	1	23-Aug-2022 16:00:39.0	yes
13	(2) HAT-P-24	WFC3/IR	1	23-Aug-2022 16:00:41.0	yes
14	(2) HAT-P-24	WFC3/IR	1	23-Aug-2022 16:00:42.0	yes

32 Total Orbits Used

ABSTRACT

HST has completed a number of surveys for a wide range of exoplanets, enabling comparative planetology. In the dozens of planets studied thus far, clouds and hazes have been found to be prevalent, and are seen to hide spectroscopic features. The atmospheric properties of giant planets are expected to vary substantially as the compositions of their host stars change, and a host star's metallicity should be an excellent proxy for the composition of the protoplanetary disk from it formed. Giant planets which formed in sufficiently metal-poor environments should in principle show marked differences in their atmospheric properties. In particular, planets around metal-poor stars should have preferentially clearer atmospheres and stronger molecular features, as there is less refractory elements such as Mg or Fe to make condensate clouds. The gas-phase chemistry will also

change as key volatile ratios like C/O change. However, to date no hot Jupiters orbiting metal-poor stars ([Fe/H] < -0.3) have been targeted by HST, with the vast majority found in metal-rich environments. Our program takes the next steps in comparative exoplanetology, targeting exoplants with reliably low stellar metallicities down to a new metal-poor extreme ([Fe/H] < -0.49). This will provide the very first comprehensive atmospheric constraints for planets around metal-poor stars, which can then be compared to the plentiful metal-rich sample. A detailed comparison of stellar abundances to the spectral features as seen in the planet could reveal correlations that provide new insights into the atmospheric chemistry of hot Jupiters, and new insights into the nature of the planet-star metallicity connection.

OBSERVING DESCRIPTION

To construct a broadband transmission spectrum, we need to observe our targets with both the WFC3 UVIS/G280 and IR/G141 grisms. That wavelength coverage provides maximum leverage to quantify the Rayleigh scattering slope, as the extinction and transit depths are expected to be very strong. The wavelength coverage provided by the instruments will be 0.2-0.8 um and 1.1- 1.7 um. Both grisms are necessary to simultaneously cover cloud scattering at short wavelengths plus Na, K, and the strongest H2O bands at longer wavelengths.

The observing strategy for transiting exoplanets consists of taking repeated exposures for the duration of each transit, plus time before and after the transits to establish the out-of-transit baseline flux. For each G141 transit, we will use the spatial scanning mode employing the strategies that have proven to be successful for past HST programs (e.g., GO-12473, 12473, 13467, and 13665). HAT-P-24 b requires five orbits per visit to optimally cover a transit event, while WASP-98 b with a shorter duration requires four orbits per visit.

Visit

Proposal 16736, WASP-98 UVIS x1 (01), scheduling Tue Aug 23 20:00:43 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 35D TO 90 D; ORIENT 104D TO 136 D; ORIENT 160D TO 194 D; ORIENT 220D TO 314 D; ORIENT 336D TO 9 D; Period 2.96264036 D AND ZERO-PHASE HJD2456333.392075

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	WASP-98	RA: 03 53 42.9206 (58.4288358d)	Proper Motion RA: 33.627 mas/yr	V=13.0	Reference Frame: ICRS
		Dec: -34 19 41.59 (-34.32822d)	Proper Motion Dec: -12.405 mas/yr	J=11.691; H=11.295	
		Equinox: J2000	Epoch of Position: 2000.0		

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=EXT-STAR
Description=[EXTRA-SOLAR PLANETARY SYSTEM, G 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.1528148)	(1) WASP-98	WFC3/UVIS, ACCUM, G280-REF	F300X	SIZEAXIS1=1500; SIZEAXIS2=500; CENTERAXIS1=2148; CENTERAXIS2=1200; FLASH=20	POS TARG 0.0,-50.0; PHASE 0.947 TO 0.952	Sequence 1-3 Non-Int in WASP-98 UVIS x1 (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 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 reference image (F475X) subarray on chip 2 (WFC3UVIS.im.1528826)	(1) WASP-98	WFC3/UVIS, ACCUM, G280-REF	F475X	SIZEAXIS1=1500; SIZEAXIS2=500; CENTERAXIS1=2148; CENTERAXIS2=1200; FLASH=20	POS TARG 0.0,-50.0	Sequence 1-3 Non-Int in WASP-98 UVIS x1 (01)	1.5 Secs (1.5 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 use FLASH=12 to meet the nominal count level. These parameters are based upon similar observations obtained successfully in proposal 13574.

Longer wave reference image is to help detect any faint stars in the field of view, to help charaterize any contaminating spectra.

#	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.1528174)	(1) WASP-98	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 1-3 Non-Int in WASP-98 UVIS x1 (01)	225 Secs X 9 (2025 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"). \These parameters are based upon similar observations obtained successfully in proposal 13574.

4	G280 image, (1) WASP-98 chip2 (WFC3UVIS.sp.152817 4)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 4-4 Non-Int in WASP-98 UVIS x1 (01)	225 Secs X 10 (2250 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=1500 and SIZEAXIS2=500 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"). These parameters are based upon similar observations obtained successfully in proposal 13574.

5	G280 image, (1) WASP-98 chip2 (WFC3UVIS.sp.152817 4)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 5-5 Non-Int in WASP-98 UVIS x1 (01)	225 Secs X 10 (2250 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=1500 and SIZEAXIS2=500 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"). These parameters are based upon similar observations obtained successfully in proposal 13574.

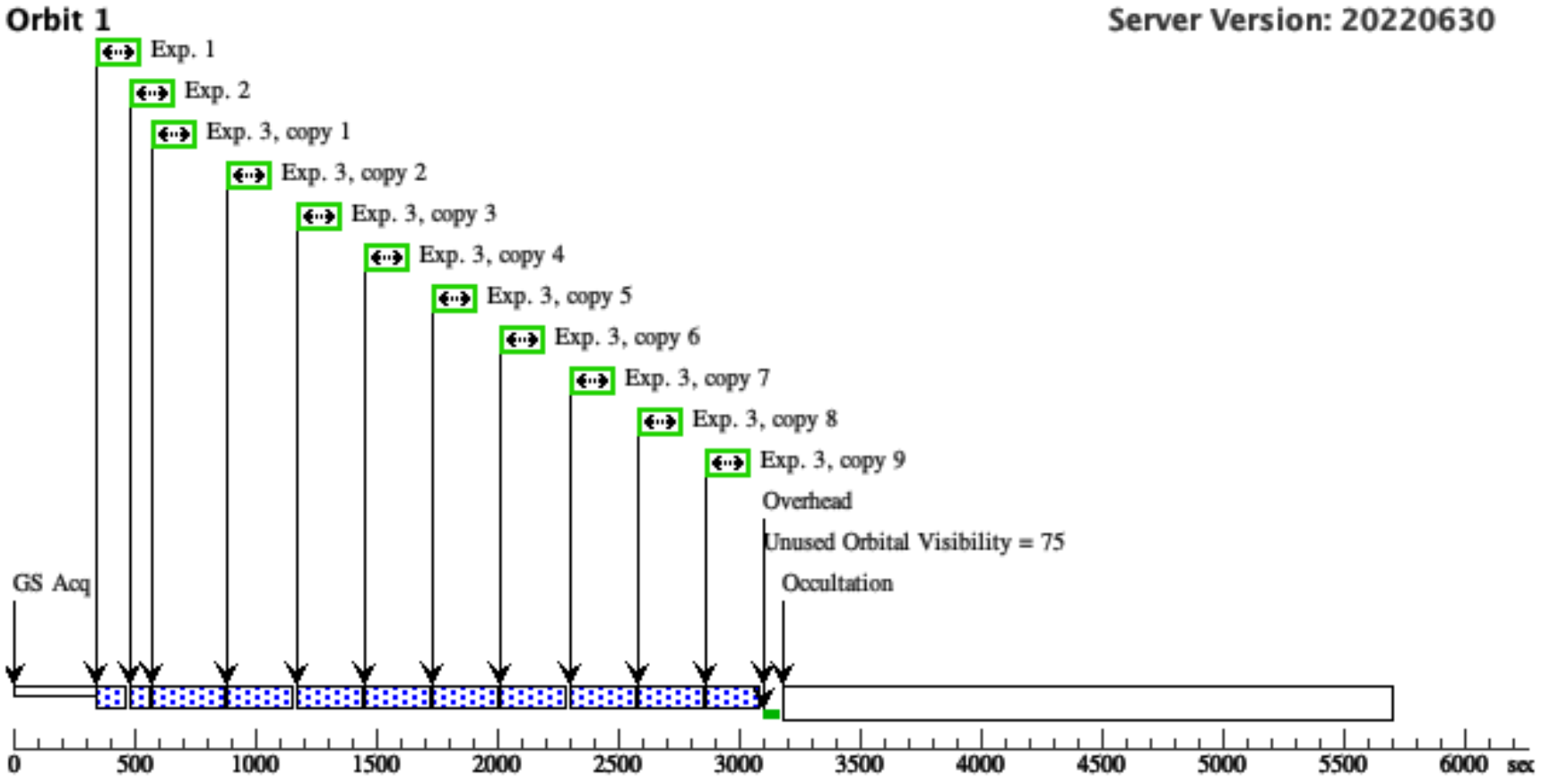
6	G280 image, (1) WASP-98 chip2 (WFC3UVIS.sp.152817 4)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 6-7 Non-Int in WASP-98 UVIS x1 (01)	225 Secs X 10 (2250 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]*	***[4]***

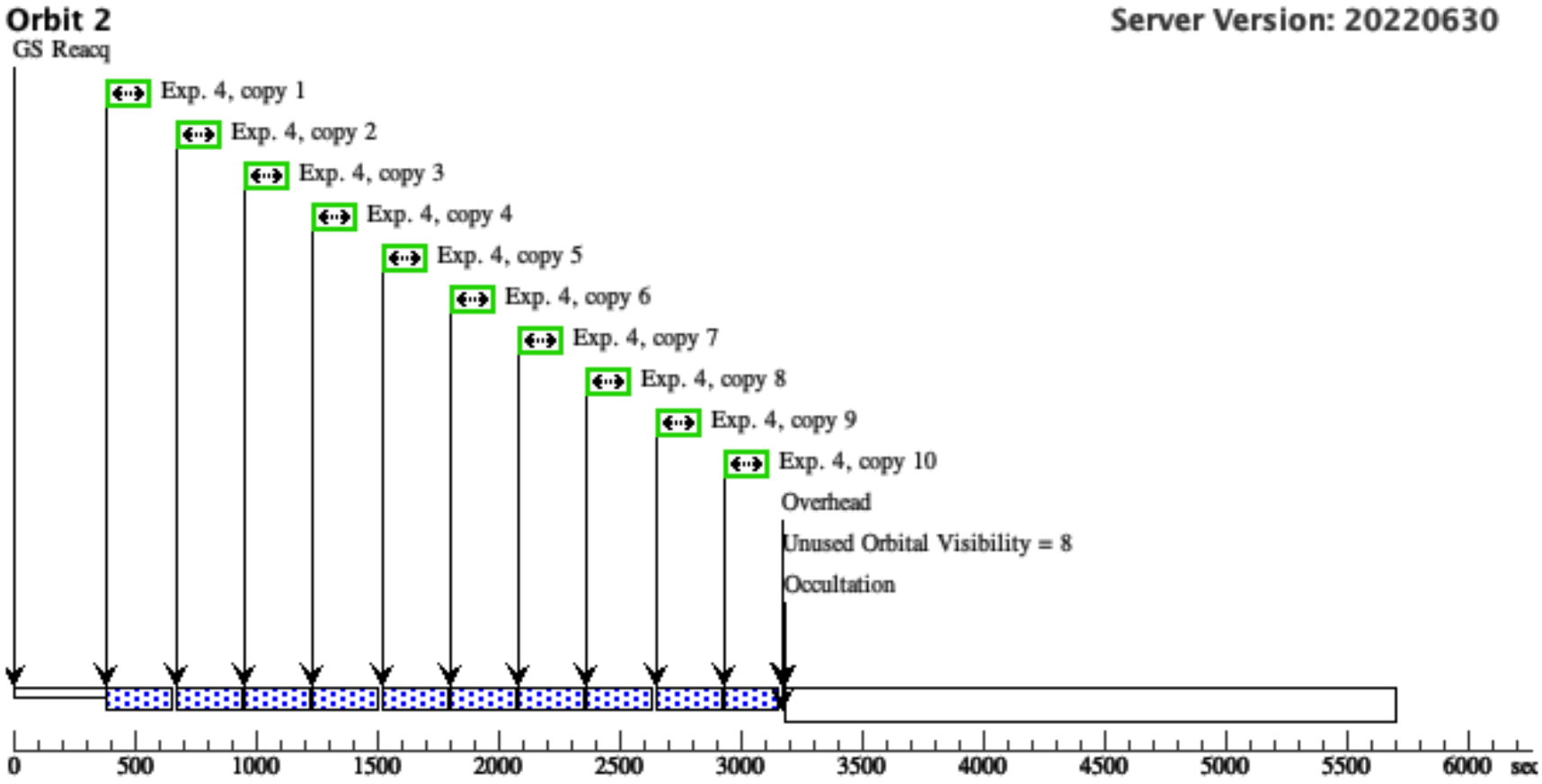
Comments: Nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of subarray on chip 2.

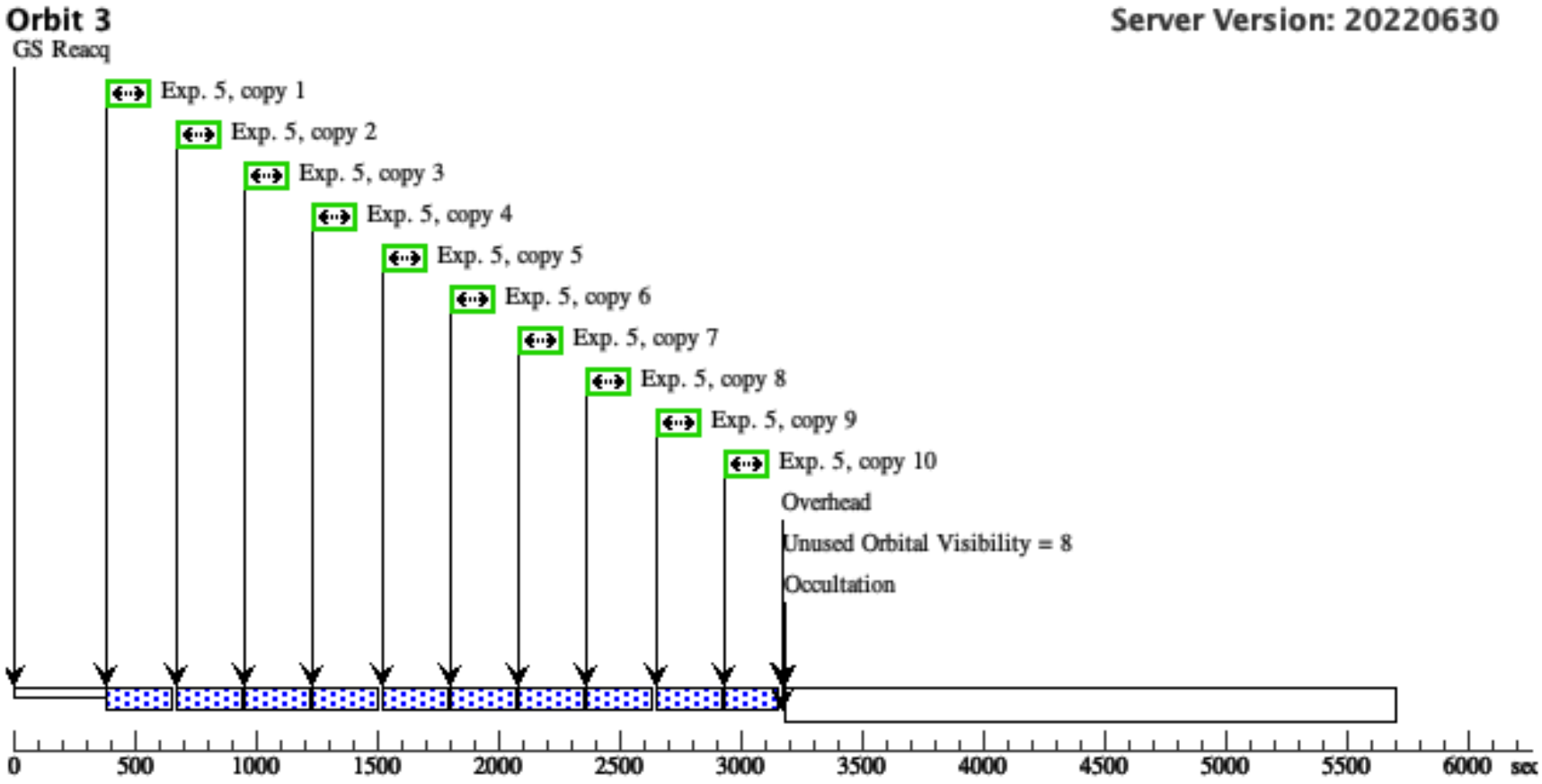
SIZEAXIS1=1500 and SIZEAXIS2=500 are used to minimize data volume, while CENTERAXIS2 is used to center the subarray readout on the target location. The latter is set to 1026, to place the vertical center of the subarray on chip 2 where the target is positioned at (2048,1026) -50" in y below the nominal aperture (assuming each pixel = 0.04"). These parameters are based upon similar observations obtained successfully in proposal 13574.

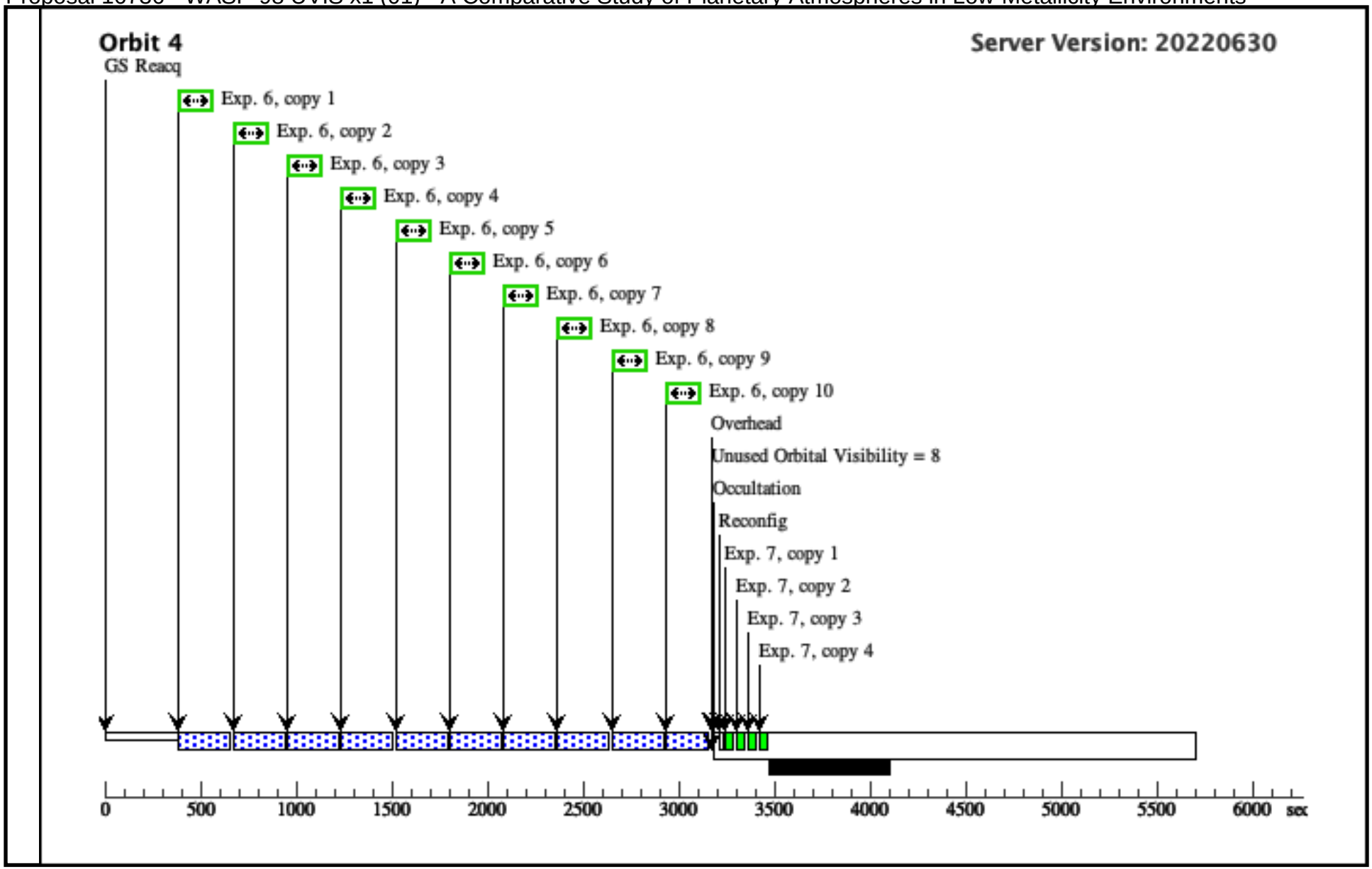
	7	Bias	BIAS	WFC3/UVIS, ACCUM, UVIS	DEF	SIZEAXIS1=1500; SIZEAXIS2=500; CENTERAXIS1=2148; CENTERAXIS2=1200	Sequence 6-7 Non-Int in WASP-98 UVIS x1 (01)	0.0 Secs X 4 (0 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	***[4]***
	Comments: We set up the bias frames based on previously sucessful program 11934 and are using the same Aperture and subarray size and position as the observations for direct calibration.								

Orbit Structure




Orbit 2
Server Version: 20220630
GS Reacq
Exp. 4, copy 1
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
Overhead
Unused Orbital Visibility = 8
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec


Orbit 3
Server Version: 20220630
GS Reacq
Exp. 5, copy 1
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
Overhead
Unused Orbital Visibility = 8
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec


Orbit 4
Server Version: 20220630
GS Reacq
Exp. 6, copy 1
Exp. 6, copy 2
Exp. 6, copy 3
Exp. 6, copy 4
Exp. 6, copy 5
Exp. 6, copy 6
Exp. 6, copy 7
Exp. 6, copy 8
Exp. 6, copy 9
Exp. 6, copy 10
Overhead
Unused Orbital Visibility = 8
Occultation
Reconfig
Exp. 7, copy 1
Exp. 7, copy 2
Exp. 7, copy 3
Exp. 7, copy 4
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec

Visit

Proposal 16736, WASP-98 UVIS x2 (02), implementation Tue Aug 23 20:00:43 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 35D TO 90 D; ORIENT 104D TO 136 D; ORIENT 160D TO 194 D; ORIENT 220D TO 314 D; ORIENT 336D TO 9 D; Period 2.96264036 D AND ZERO-PHASE HJD2456333.392075

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	WASP-98	RA: 03 53 42.9206 (58.4288358d)	Proper Motion RA: 33.627 mas/yr	V=13.0	Reference Frame: ICRS
		Dec: -34 19 41.59 (-34.32822d)	Proper Motion Dec: -12.405 mas/yr	J=11.691; H=11.295	
		Equinox: J2000	Epoch of Position: 2000.0		

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=EXT-STAR
Description=[EXTRA-SOLAR PLANETARY SYSTEM, G 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.1528148)	(1) WASP-98	WFC3/UVIS, ACCUM, G280-REF	F300X	SIZEAXIS1=1500; SIZEAXIS2=500; CENTERAXIS1=2148; CENTERAXIS2=1200; FLASH=20	POS TARG 0.0,-50.0; PHASE 0.947 TO 0.952	Sequence 1-3 Non-Int in WASP-98 UVIS x2 (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 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 reference image (F475X) subarray on chip 2 (WFC3UVIS.im.1528826)	(1) WASP-98	WFC3/UVIS, ACCUM, G280-REF	F475X	SIZEAXIS1=1500; SIZEAXIS2=500; CENTERAXIS1=2148; CENTERAXIS2=1200; FLASH=20	POS TARG 0.0,-50.0	Sequence 1-3 Non-Int in WASP-98 UVIS x2 (02)	1.5 Secs (1.5 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 use FLASH=12 to meet the nominal count level. These parameters are based upon similar observations obtained successfully in proposal 13574.

Longer wave reference image is to help detect any faint stars in the field of view, to help charaterize any contaminating spectra.

#	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.1528174)	(1) WASP-98	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 1-3 Non-Int in WASP-98 UVIS x2 (02)	225 Secs X 9 (2025 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"). \These parameters are based upon similar observations obtained successfully in proposal 13574.

4	G280 image, (1) WASP-98 chip2 (WFC3UVIS.sp.152817 4)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 4-4 Non-Int in WASP-98 UVIS x2 (02)	225 Secs X 10 (2250 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"). These parameters are based upon similar observations obtained successfully in proposal 13574.

5	G280 image, (1) WASP-98 chip2 (WFC3UVIS.sp.152817 4)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 5-5 Non-Int in WASP-98 UVIS x2 (02)	225 Secs X 10 (2250 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"). These parameters are based upon similar observations obtained successfully in proposal 13574.

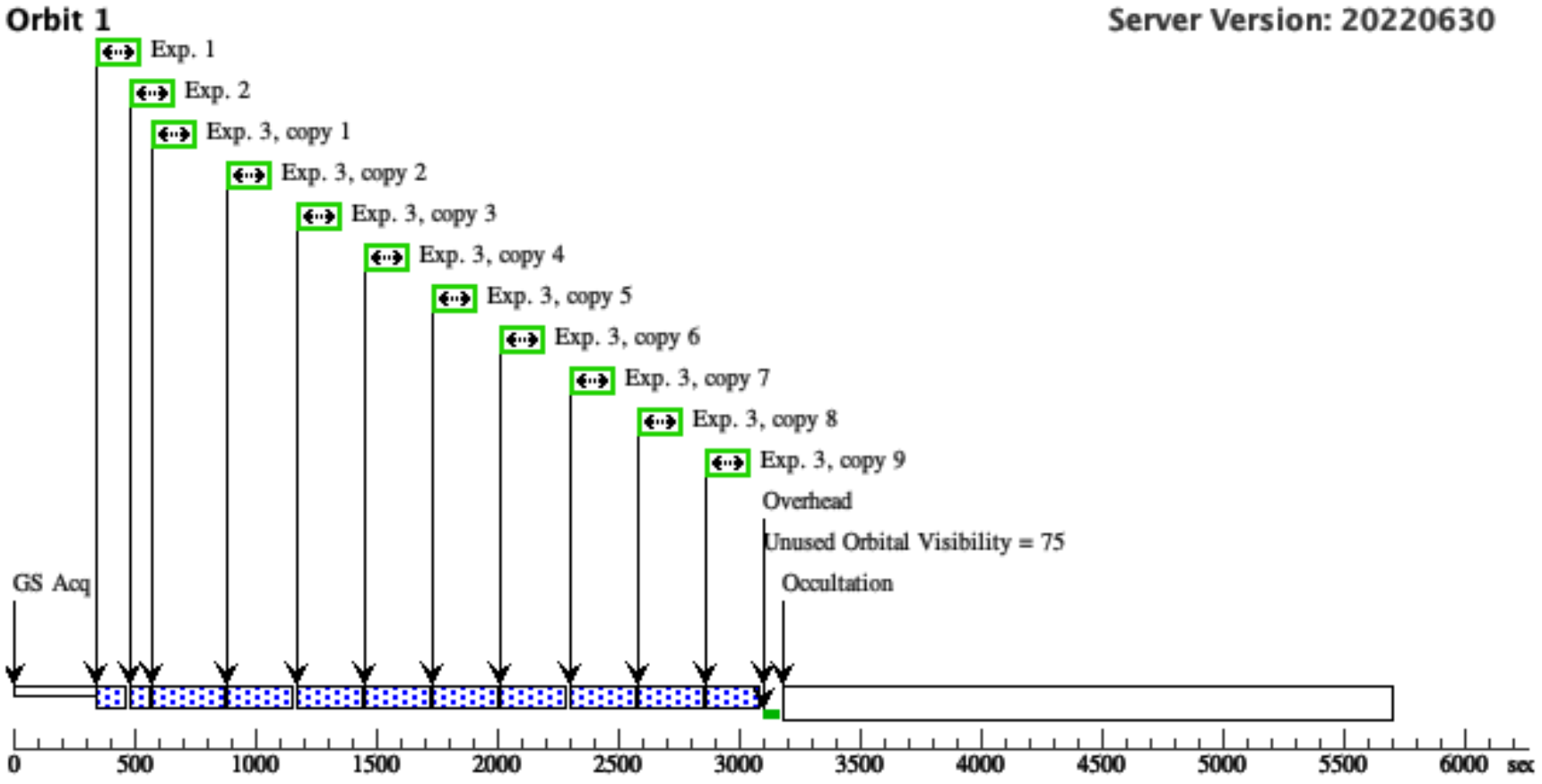
6	G280 image, (1) WASP-98 chip2 (WFC3UVIS.sp.152817 4)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 6-7 Non-Int in WASP-98 UVIS x2 (02)	225 Secs X 10 (2250 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]*	***[4]***

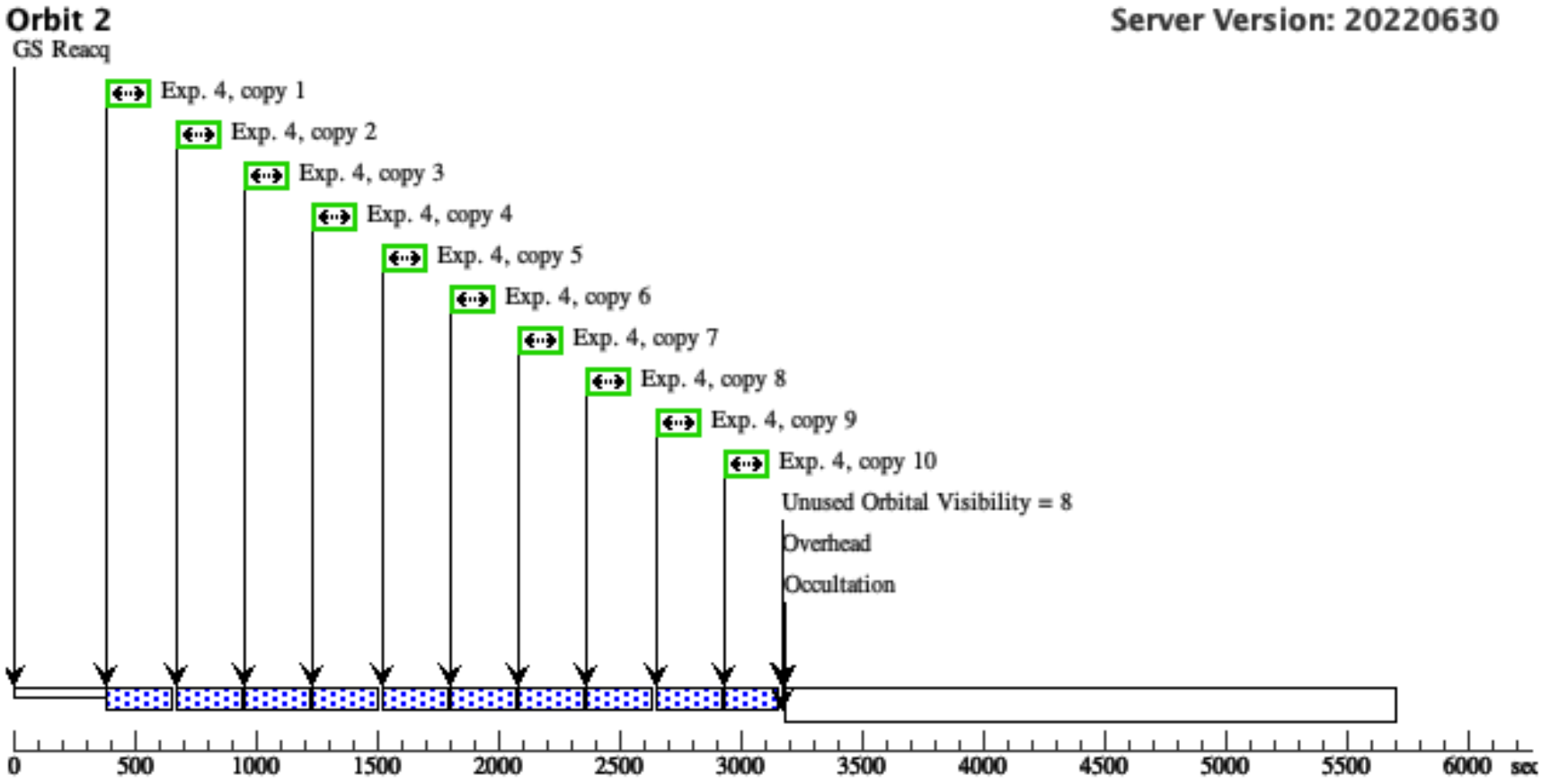
Comments: Nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of subarray on chip 2.

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"). These parameters are based upon similar observations obtained successfully in proposal 13574.

	7	Bias	BIAS	WFC3/UVIS, ACCUM, UVIS	DEF	SIZEAXIS1=1500; SIZEAXIS2=500; CENTERAXIS1=2148; CENTERAXIS2=1200	Sequence 6-7 Non-Int in WASP-98 UVIS x2 (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




Orbit 2
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GS Reacq
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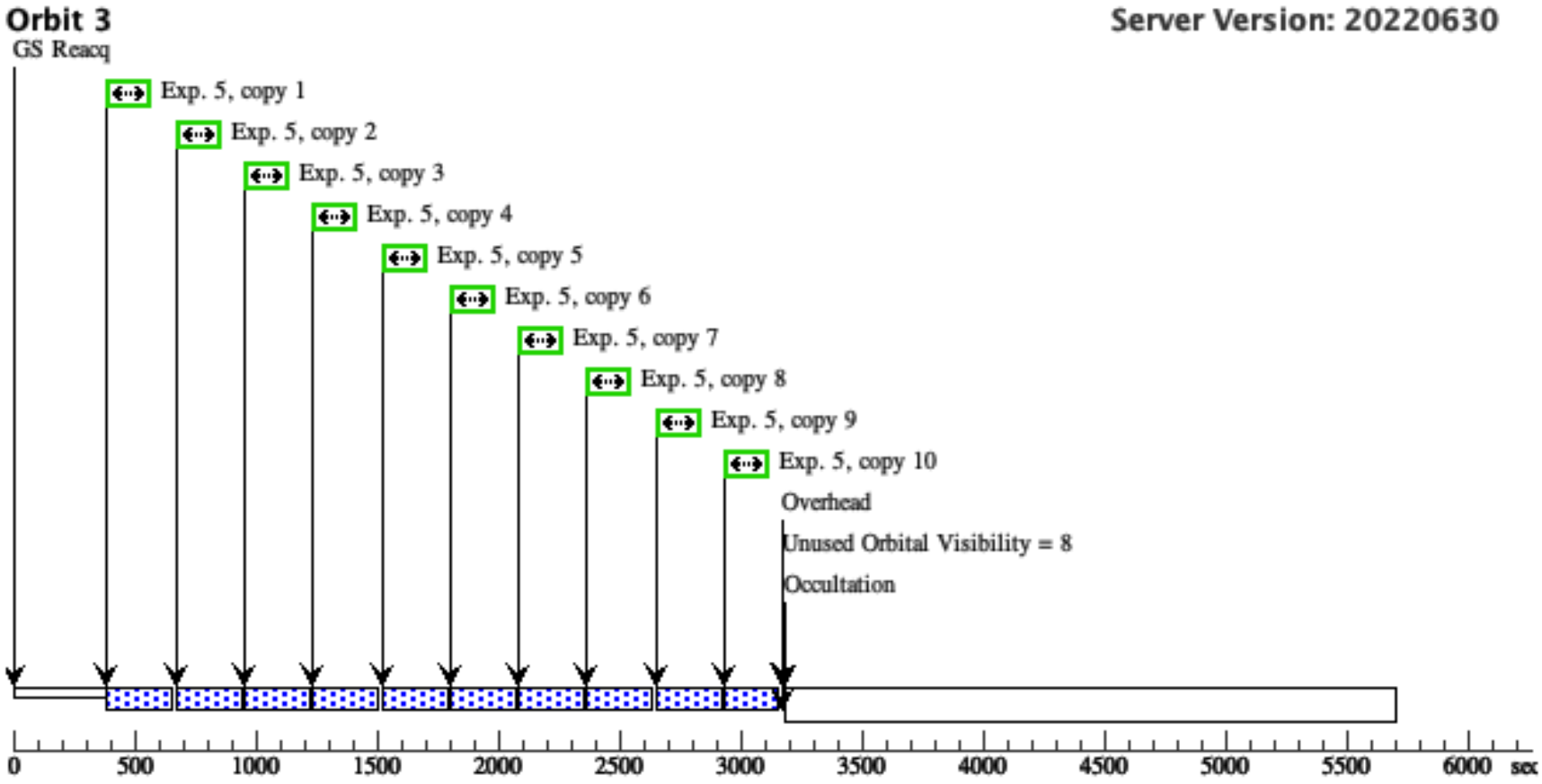
Exp. 4, copy 3
Exp. 4, copy 4
Exp. 4, copy 5
Exp. 4, copy 6
Exp. 4, copy 7
Exp. 4, copy 8
Exp. 4, copy 9
Exp. 4, copy 10
Unused Orbital Visibility = 8
Overhead
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec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Server Version: 20220630
GS Reacq
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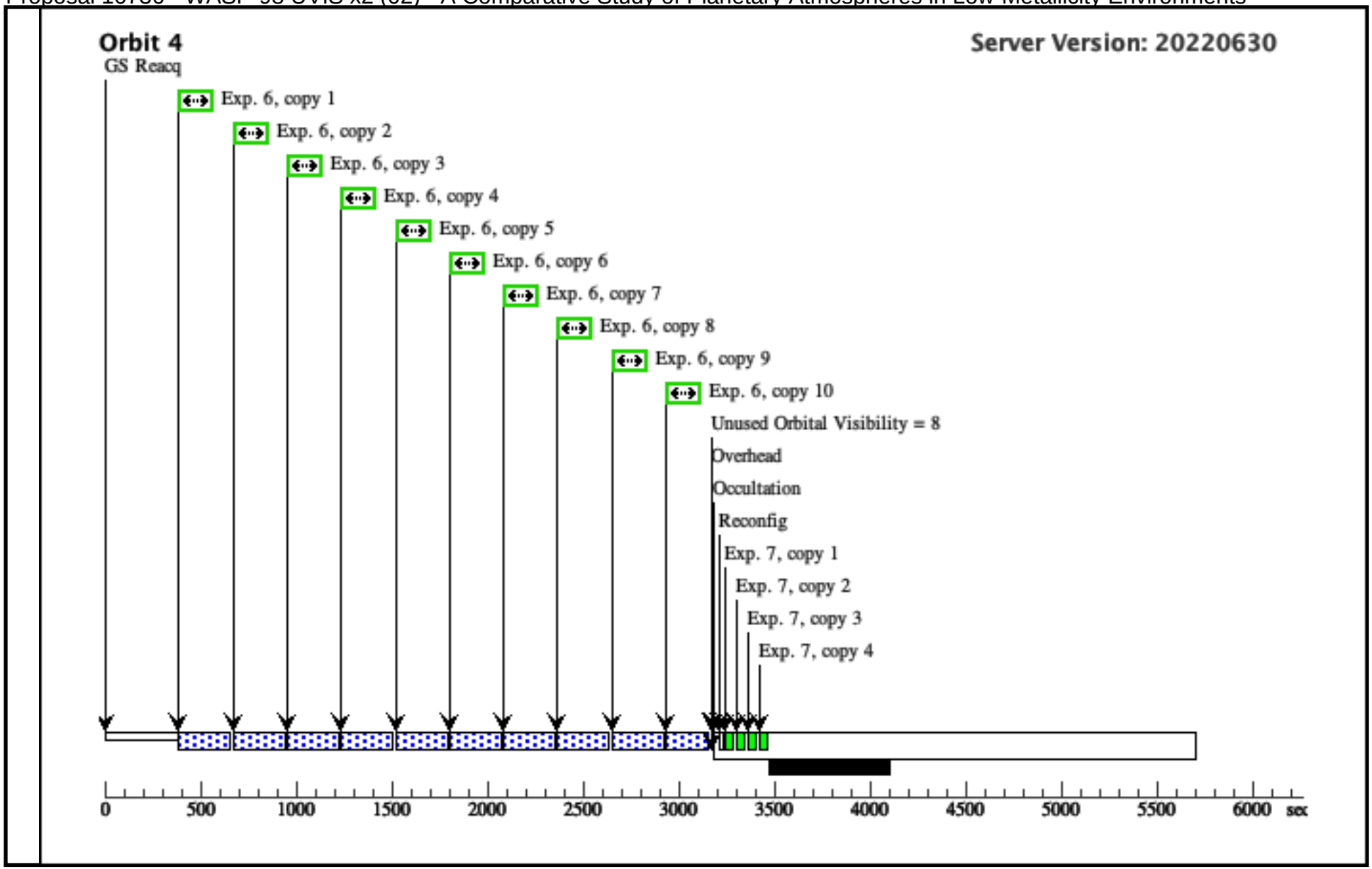
Exp. 5, copy 2
Exp. 5, copy 3
Exp. 5, copy 4
Exp. 5, copy 5
Exp. 5, copy 6
Exp. 5, copy 7
Exp. 5, copy 8
Exp. 5, copy 9
Exp. 5, copy 10
Overhead
Unused Orbital Visibility = 8
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec


Orbit 4
Server Version: 20220630
GS Reacq
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Exp. 6, copy 3
Exp. 6, copy 4
Exp. 6, copy 5
Exp. 6, copy 6
Exp. 6, copy 7
Exp. 6, copy 8
Exp. 6, copy 9
Exp. 6, copy 10
Unused Orbital Visibility = 8
Overhead
Occultation
Reconfig
Exp. 7, copy 1
Exp. 7, copy 2
Exp. 7, copy 3
Exp. 7, copy 4
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec

Visit

Proposal 16736, WASP-98 WFC3/G141 Orbit 1 (03), completed Tue Aug 23 20:00:43 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: SCHED 100%; Period 2.96264036 D AND ZERO-PHASE HJD2456333.392075

Comments: WFC3/G141 time series transit observations consisiting of four consecutive HST orbits. Visits WASP-98 WFC3/G141 1, 2, 3 and 4 must be scheduled consecutively. The visits have been broken up in APT to force a buffer dump at the end of each orbit, which drastically increases the duty cycle, which is important for time-series observations.

-7" offset has been applied such that the target spatial scan is near the middle of the 256 subarray.

Fixed Targets

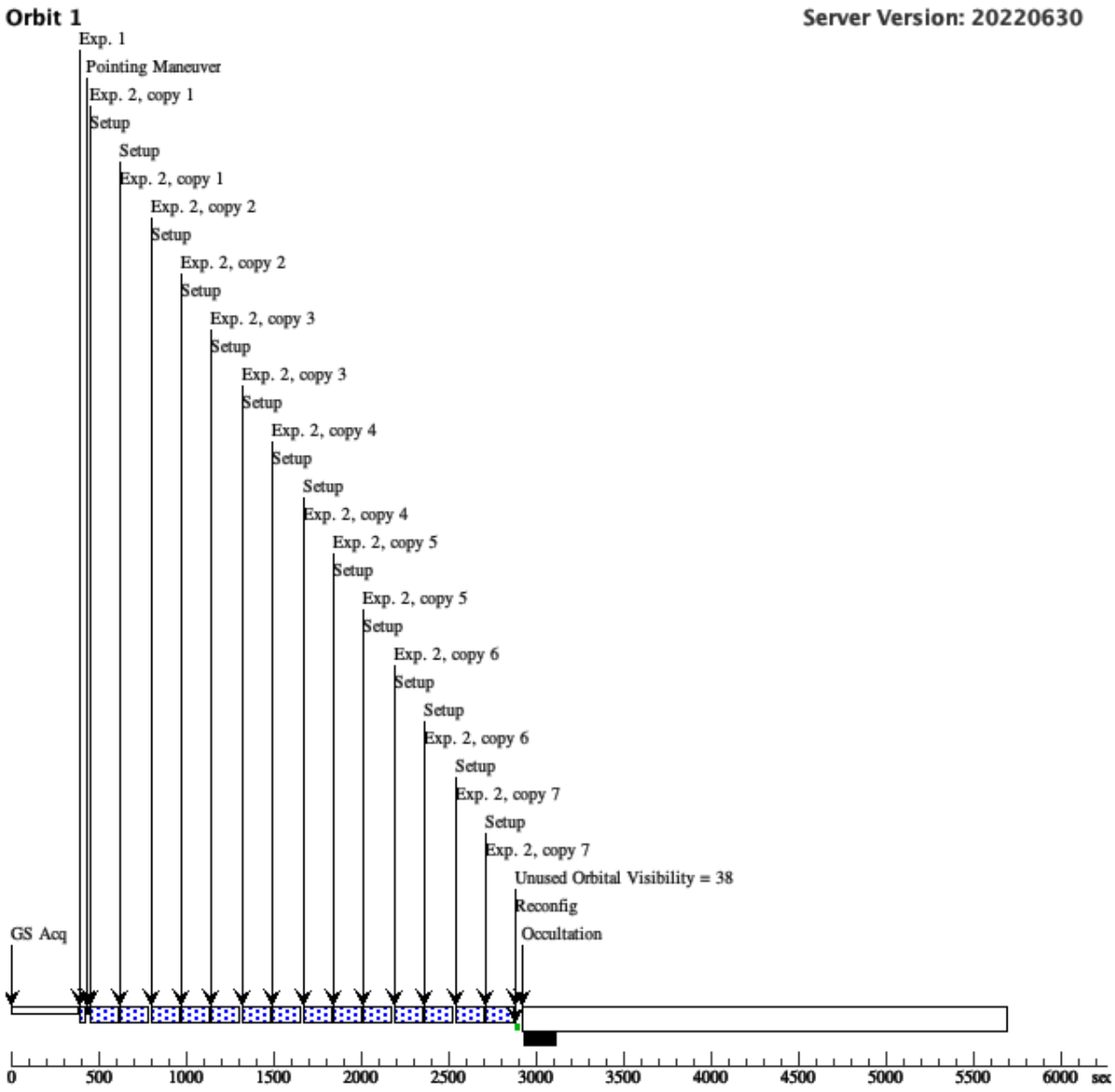
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	WASP-98	RA: 03 53 42.9206 (58.4288358d)	Proper Motion RA: 33.627 mas/yr	V=13.0	Reference Frame: ICRS
		Dec: -34 19 41.59 (-34.32822d)	Proper Motion Dec: -12.405 mas/yr	J=11.691; H=11.295	
		Equinox: J2000	Epoch of Position: 2000.0		

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

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Acquisition DI (WFC3IR.im.1529080)	(1) WASP-98	WFC3/IR, MULTIACCUM, GRISM256	F127M	SAMP-SEQ=RAPID; NSAMP=4	POS TARG null,-7; PHASE 0.94690828 19533767 TO 0.9518306928980969	Sequence 1-2 Non-Int in WASP-98 WFC3/G141 Orbit 1 (03)	1.11126 Secs (1.111 Secs) *[==>]*	 ***[1]***
	Comments: Direct filter image to assist with wavelength calibration. Image is only used to find the reference detctor possition. Filter chosen to be in G141 wavelength range and give high SNR in a short exposure.								
2	Orbit 1 - Science Scans x 7 Round-trip (WFC3IR.ss.1395816)	(1) WASP-98	WFC3/IR, MULTIACCUM, GRISM256	G141	SAMP-SEQ=SPARS25; NSAMP=7	POS TARG null,-7; SPATIAL SCAN 0.00871566,90.0 Degrees,Round trip	Sequence 1-2 Non-Int in WASP-98 WFC3/G141 Orbit 1 (03)	134.354049 Secs X 7 (1880.957 Secs) *[==>(Copy 1, Forward)]* *[==>(Copy 1, Reverse)]* *[==>(Copy 2, Forward)]* *[==>(Copy 2, Reverse)]* *[==>(Copy 3, Forward)]* *[==>(Copy 3, Reverse)]* *[==>(Copy 4, Forward)]* *[==>(Copy 4, Reverse)]* *[==>(Copy 5, Forward)]* *[==>(Copy 5, Reverse)]* *[==>(Copy 6, Forward)]* *[==>(Copy 6, Reverse)]* *[==>(Copy 7, Forward)]* *[==>(Copy 7, Reverse)]*	 ***[1]***

Orbit Structure



Visit

Proposal 16736, WASP-98 WFC3/G141 Orbit 2 (04), completed Tue Aug 23 20:00:43 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: SCHED 100%; SAME ORIENT AS 03; AFTER 03 BY 0.7 Orbits TO 1.1 Orbits

Comments: Second orbit of G102 transit. Must be scheduled directly after WASP-98 WFC3/G102 Orbit 1 (03).

Fixed Targets

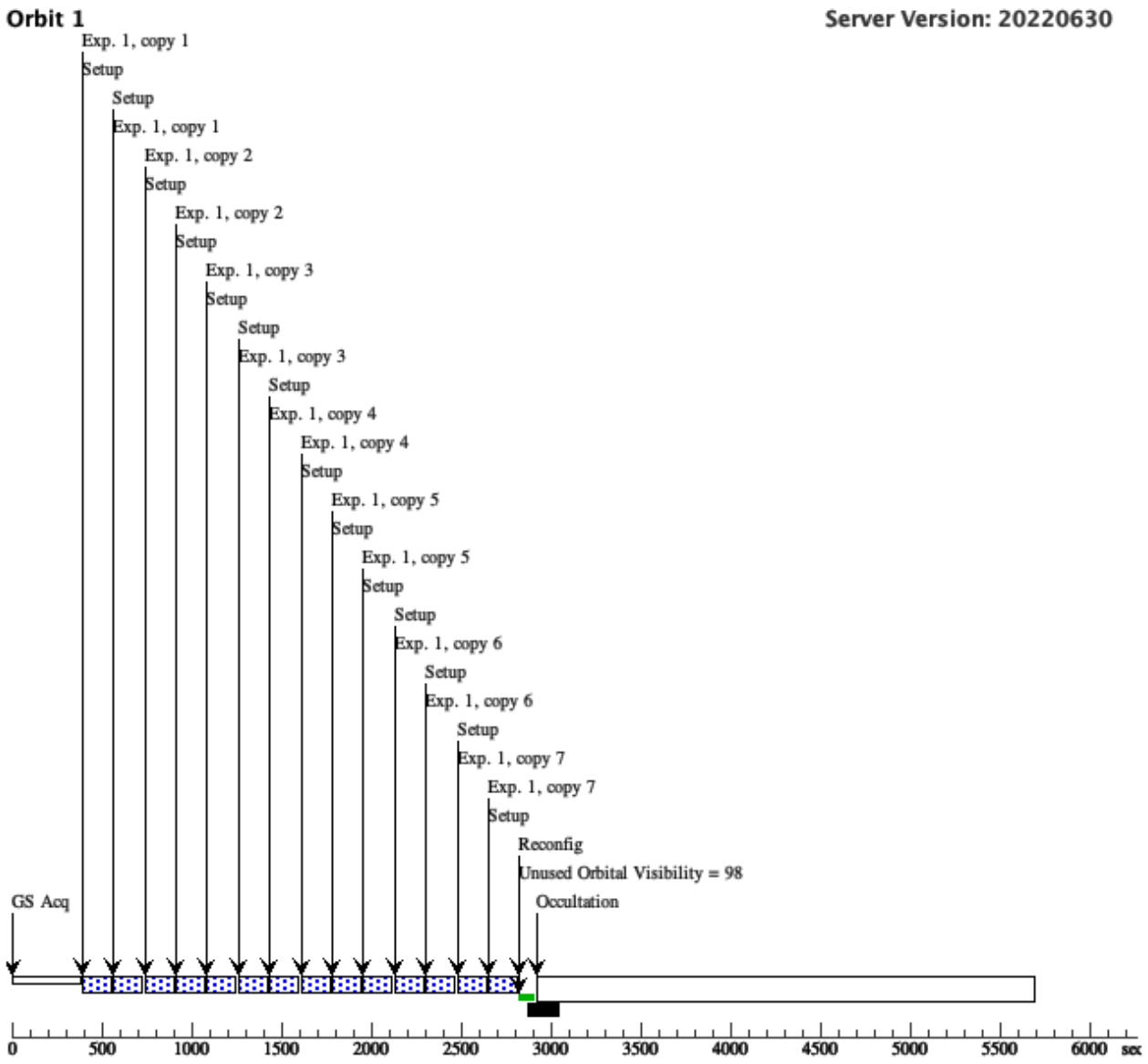
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	WASP-98	RA: 03 53 42.9206 (58.4288358d)	Proper Motion RA: 33.627 mas/yr	V=13.0	Reference Frame: ICRS
		Dec: -34 19 41.59 (-34.32822d)	Proper Motion Dec: -12.405 mas/yr	J=11.691; H=11.295	
		Equinox: J2000	Epoch of Position: 2000.0		

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

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Orbit 3 - Science Scans x 22 Round-trip (WFC3IR.ss.1395816)	(1) WASP-98	WFC3/IR, MULTIACCUM, GRISM256	G141	SAMP-SEQ=SPARS25; NSAMP=7	POS TARG null,-7; SPATIAL SCAN 0.00871566,90.0 Degrees,Round trip	Sequence 1-1 Non-Int in WASP-98 WFC3/G141 Orbit 2 (04)	134.354049 Secs X 7 (1880.957 Secs) *[==>(Copy 1, Forward)]* *[==>(Copy 1, Reverse)]* *[==>(Copy 2, Forward)]* *[==>(Copy 2, Reverse)]* *[==>(Copy 3, Forward)]* *[==>(Copy 3, Reverse)]* *[==>(Copy 4, Forward)]* *[==>(Copy 4, Reverse)]* *[==>(Copy 5, Forward)]* *[==>(Copy 5, Reverse)]* *[==>(Copy 6, Forward)]* *[==>(Copy 6, Reverse)]* *[==>(Copy 7, Forward)]* *[==>(Copy 7, Reverse)]*	***[1]***

Orbit Structure



Visit

Proposal 16736, WASP-98 WFC3/G141 Orbit 3 (05), completed Tue Aug 23 20:00:43 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: SCHED 100%; SAME ORIENT AS 03; AFTER 04 BY 0.7 Orbits TO 1.1 Orbits

Comments: Third orbit of G102 transit. Must be scheduled directly after WASP-98 WFC3/G102 Orbit 2 (04).

Fixed Targets

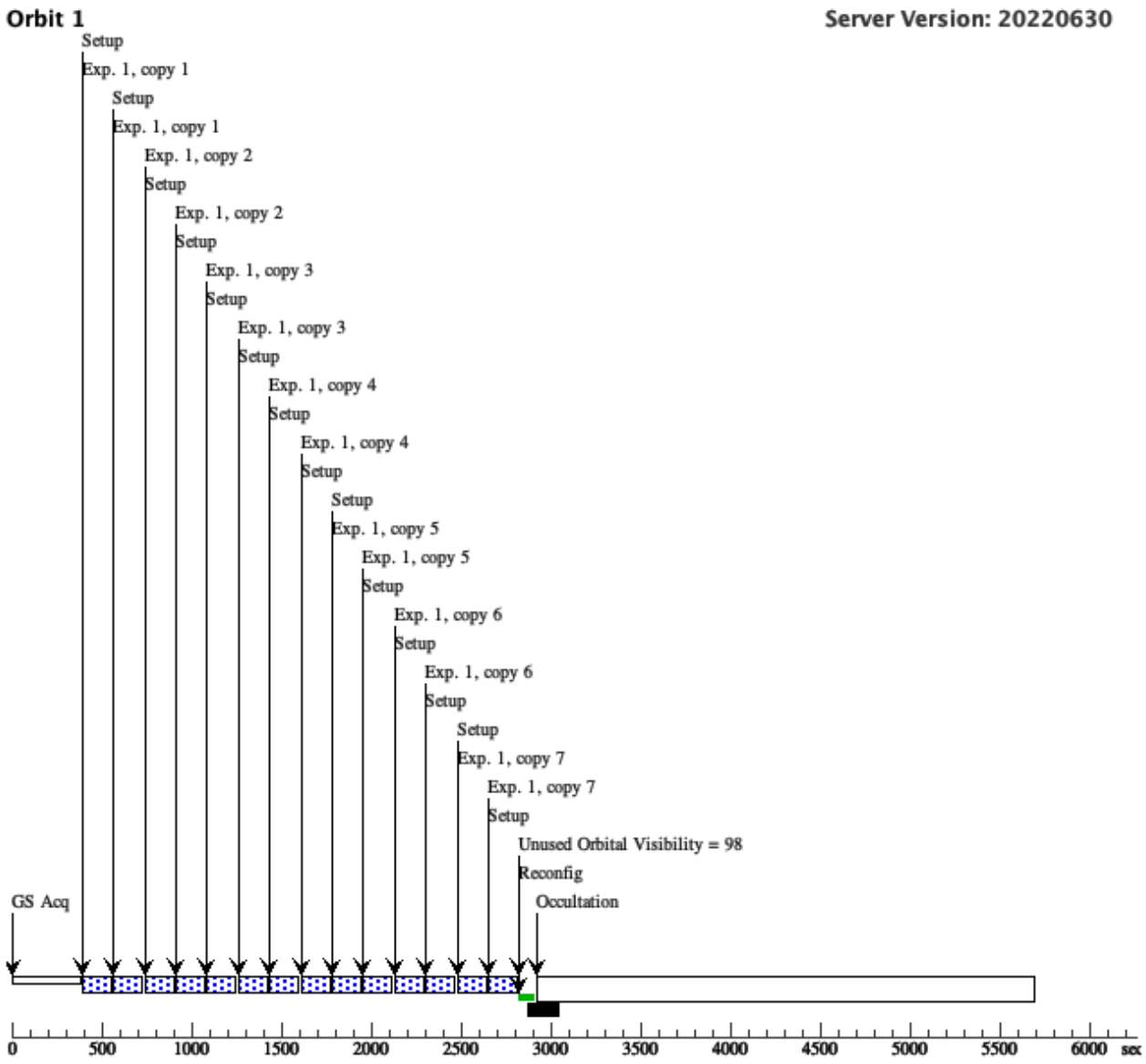
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	WASP-98	RA: 03 53 42.9206 (58.4288358d)	Proper Motion RA: 33.627 mas/yr	V=13.0	Reference Frame: ICRS
		Dec: -34 19 41.59 (-34.32822d)	Proper Motion Dec: -12.405 mas/yr	J=11.691; H=11.295	
		Equinox: J2000	Epoch of Position: 2000.0		

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

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Orbit 3 - Science Scans x 22 Round-trip	(1) WASP-98	WFC3/IR, MULTIACCUM, GRISM256	G141	SAMP-SEQ=SPARS25; NSAMP=7	POS TARG null,-7; SPATIAL SCAN 0.0871566,90.0 Degrees,Round trip	Sequence 1-1 Non-Int in WASP-98 WFC3/G141 Orbit 3 (05)	134.354049 Secs X 7 (1880.957 Secs) *[==>(Copy 1, Forward)]* *[==>(Copy 1, Reverse)]* *[==>(Copy 2, Forward)]* *[==>(Copy 2, Reverse)]* *[==>(Copy 3, Forward)]* *[==>(Copy 3, Reverse)]* *[==>(Copy 4, Forward)]* *[==>(Copy 4, Reverse)]* *[==>(Copy 5, Forward)]* *[==>(Copy 5, Reverse)]* *[==>(Copy 6, Forward)]* *[==>(Copy 6, Reverse)]* *[==>(Copy 7, Forward)]* *[==>(Copy 7, Reverse)]*	***[1]***

Orbit Structure



Visit

Proposal 16736, WASP-98 WFC3/G141 Orbit 4 (06), completed Tue Aug 23 20:00:43 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: SCHED 100%; SAME ORIENT AS 03; AFTER 05 BY 0.7 Orbits TO 1.1 Orbits

Comments: Fourth orbit of G102 transit. Must be scheduled directly after WASP-98 WFC3/G102 Orbit 3 (05).

Fixed Targets

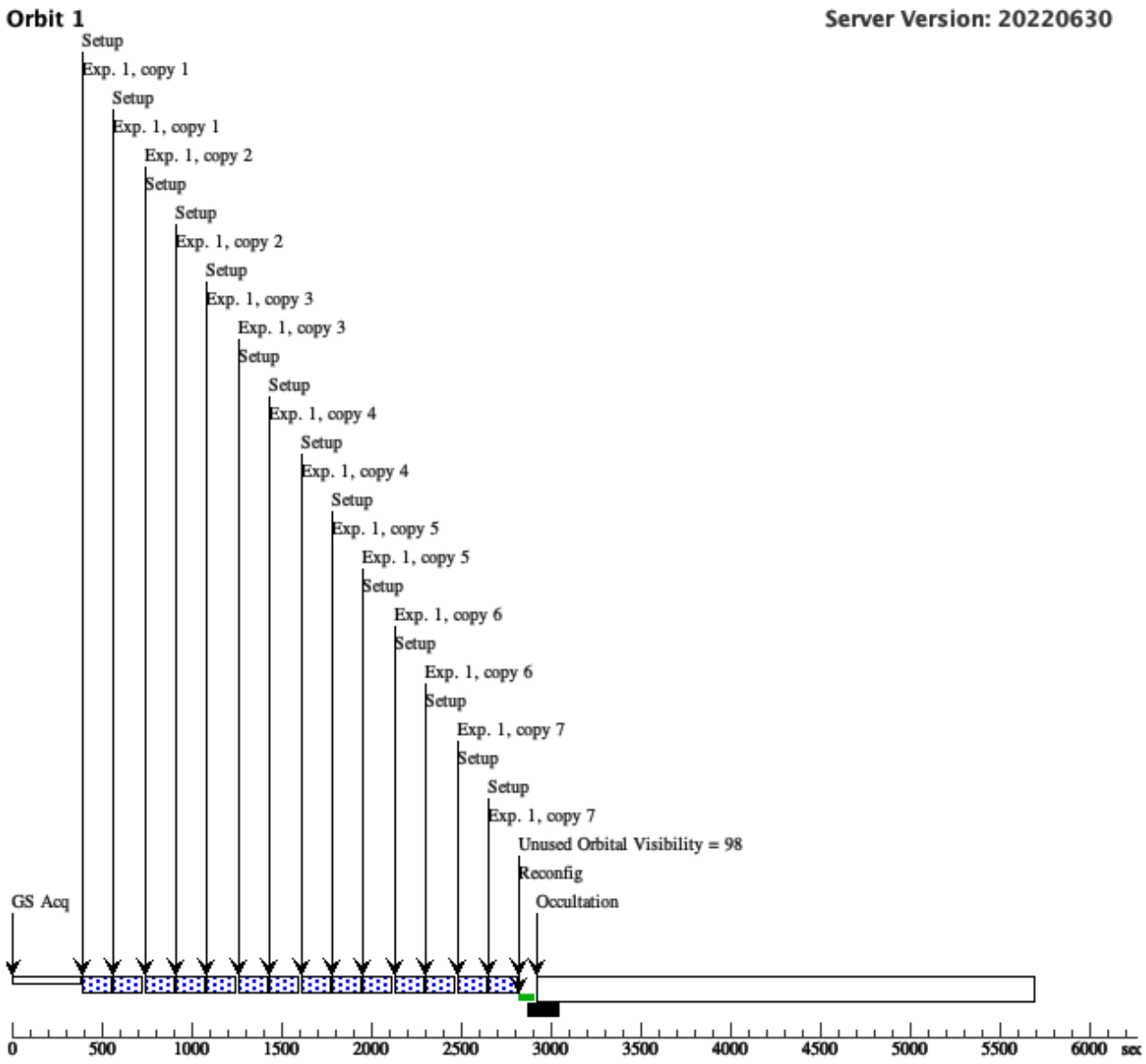
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	WASP-98	RA: 03 53 42.9206 (58.4288358d)	Proper Motion RA: 33.627 mas/yr	V=13.0	Reference Frame: ICRS
		Dec: -34 19 41.59 (-34.32822d)	Proper Motion Dec: -12.405 mas/yr	J=11.691; H=11.295	
		Equinox: J2000	Epoch of Position: 2000.0		

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

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Orbit 4 - Science Scans x 22 Round-trip	(1) WASP-98	WFC3/IR, MULTIACCUM, GRISM256	G141	SAMP-SEQ=SPARS25; NSAMP=7	POS TARG null,-7; SPATIAL SCAN 0.0871566,90.0 Degrees,Round trip	Sequence 1-1 Non-Int in WASP-98 WFC3/G141 Orbit 4 (06)	134.354049 Secs X 7 (1880.957 Secs) *[==>(Copy 1, Forward)]* *[==>(Copy 1, Reverse)]* *[==>(Copy 2, Forward)]* *[==>(Copy 2, Reverse)]* *[==>(Copy 3, Forward)]* *[==>(Copy 3, Reverse)]* *[==>(Copy 4, Forward)]* *[==>(Copy 4, Reverse)]* *[==>(Copy 5, Forward)]* *[==>(Copy 5, Reverse)]* *[==>(Copy 6, Forward)]* *[==>(Copy 6, Reverse)]* *[==>(Copy 7, Forward)]* *[==>(Copy 7, Reverse)]*	***[1]***

Orbit Structure



Visit

Proposal 16736, HAT-P-24 UVIS x1 (07), failed Tue Aug 23 20:00:44 GMT 2022

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 60D TO 70 D; ORIENT 85D TO 134 D; ORIENT 145D TO 158 D; ORIENT 235D TO 243 D; ORIENT 270D TO 331 D; Period 3.3552450879 D AND ZERO-PHASE HJD2456938.2174007813

Comments: period updated from Literature with TESS transits

Diagnostics

(G280 image, chip2 (07.003)) 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 (07.004)) 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 (07.005)) 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 (07.006)) 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 (07.007)) 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
(2)	HAT-P-24	RA: 07 15 18.0194 (108.8250808d)	Proper Motion RA: 8.152 mas/yr	V=11.76	Reference Frame: SIMBAD
		Dec: +14 15 45.41 (14.26261d)	Proper Motion Dec: -1.716 mas/yr	J=10.797; H=10.589	
		Equinox: J2000	Epoch of Position: 2000.0		

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. F8
Category=EXT-STAR
Description=[EXTRA-SOLAR PLANETARY SYSTEM, F3-F9]

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.1529159)	(2) HAT-P-24	WFC3/UVIS, ACCUM, G280-REF	F300X	SIZEAXIS1=1500; SIZEAXIS2=500; CENTERAXIS1=2148; CENTERAXIS2=1200; FLASH=20	POS TARG 0.0,-50.0; PHASE 0.9432 TO 0.94742	Sequence 1-3 Non-Int in HAT-P-24 UVIS x1 (07)	15 Secs (15 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 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 reference image (F300X) subarray on chip 2, phase constrained (WFC3UVIS.im.1529159)	(2) HAT-P-24	WFC3/UVIS, ACCUM, G280-REF	F300X	SIZEAXIS1=1500; SIZEAXIS2=500; CENTERAXIS1=2148; CENTERAXIS2=1200; FLASH=20	POS TARG 0.0,-50.0	Sequence 1-3 Non-Int in HAT-P-24 UVIS x1 (07)	15 Secs X 2 (30 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]*	***[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 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
3	G280 image, chip2 (WFC3UVIS.im.1529164)	(2) HAT-P-24	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 1-3 Non-Int in HAT-P-24 UVIS x1 (07)	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"). \These parameters are based upon similar observations obtained successfully in proposal 13574.

4	G280 image, (2) HAT-P-24 chip2 (WFC3UVIS.im.1529164)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 4-4 Non-Int in HAT-P-24 UVIS x1 (07)	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=1500 and SIZEAXIS2=500 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"). \These parameters are based upon similar observations obtained successfully in proposal 13574.

5	G280 image, (2) HAT-P-24 chip2 (WFC3UVIS.im.1529164)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 5-5 Non-Int in HAT-P-24 UVIS x1 (07)	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=1500 and SIZEAXIS2=500 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"). \These parameters are based upon similar observations obtained successfully in proposal 13574.

6	G280 image, (2) HAT-P-24 chip2 (WFC3UVIS.im.1529164)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 6-6 Non-Int in HAT-P-24 UVIS x1 (07)	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=1500 and SIZEAXIS2=500 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"). \These parameters are based upon similar observations obtained successfully in proposal 13574.

7	G280 image, chip2 (WFC3UVIS.im.1529164)	(2) HAT-P-24	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 7-8 Non-Int in HAT-P-24 UVIS x1 (07)	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)]*	***[5]***

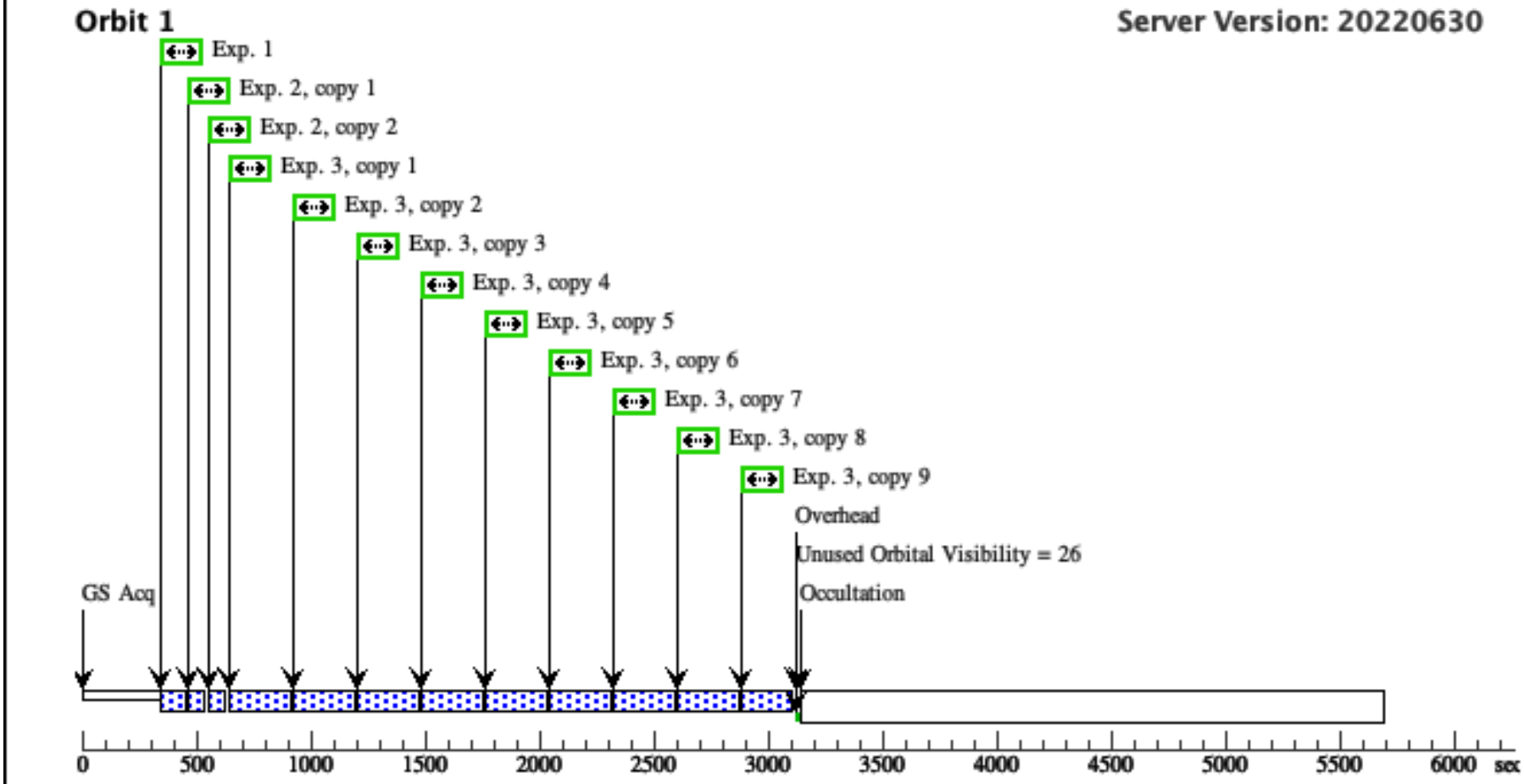
Comments: Nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of subarray on chip 2.

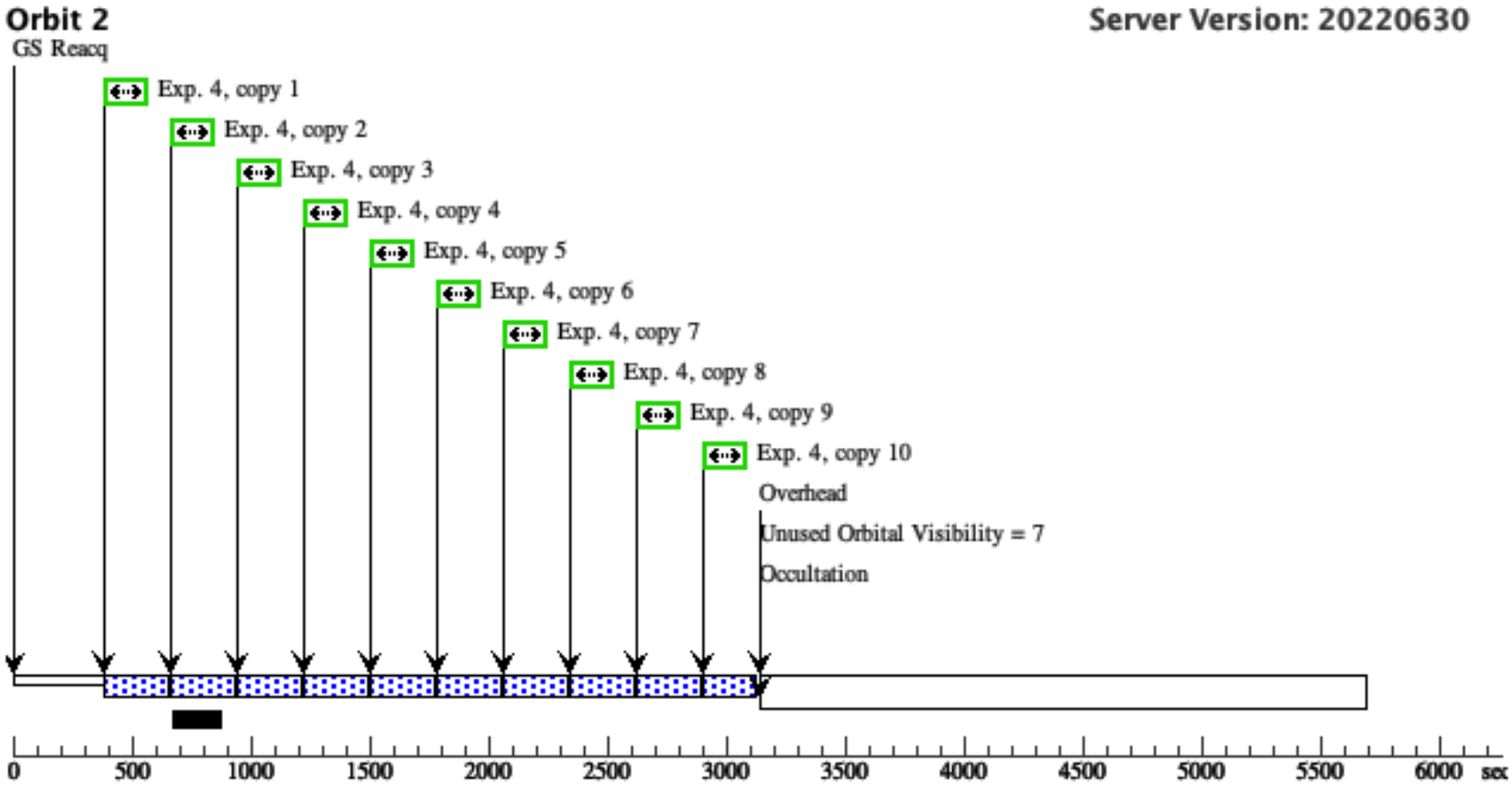
SIZEAXIS1=1500 and SIZEAXIS2=500 are used to minimize data volume, while CENTERAXIS2 is used to center the subarray readout on the target location. The latter is set to 1026, to place the vertical center of the subarray on chip 2 where the target is positioned at (2048,1026) -50" in y below the nominal aperture (assuming each pixel = 0.04"). \These parameters are based upon similar observations obtained successfully in proposal 13574.

8	Bias	BIAS	WFC3/UVIS, ACCUM, UVIS	DEF	SIZEAXIS1=1500; SIZEAXIS2=500; CENTERAXIS1=2148; CENTERAXIS2=1200		Sequence 7-8 Non-Int in HAT-P-24 UVIS x1 (07)	0.0 Secs X 4 (0 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	***[5]***

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. 4, copy 8
Exp. 4, copy 9
Exp. 4, copy 10
Overhead
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3500
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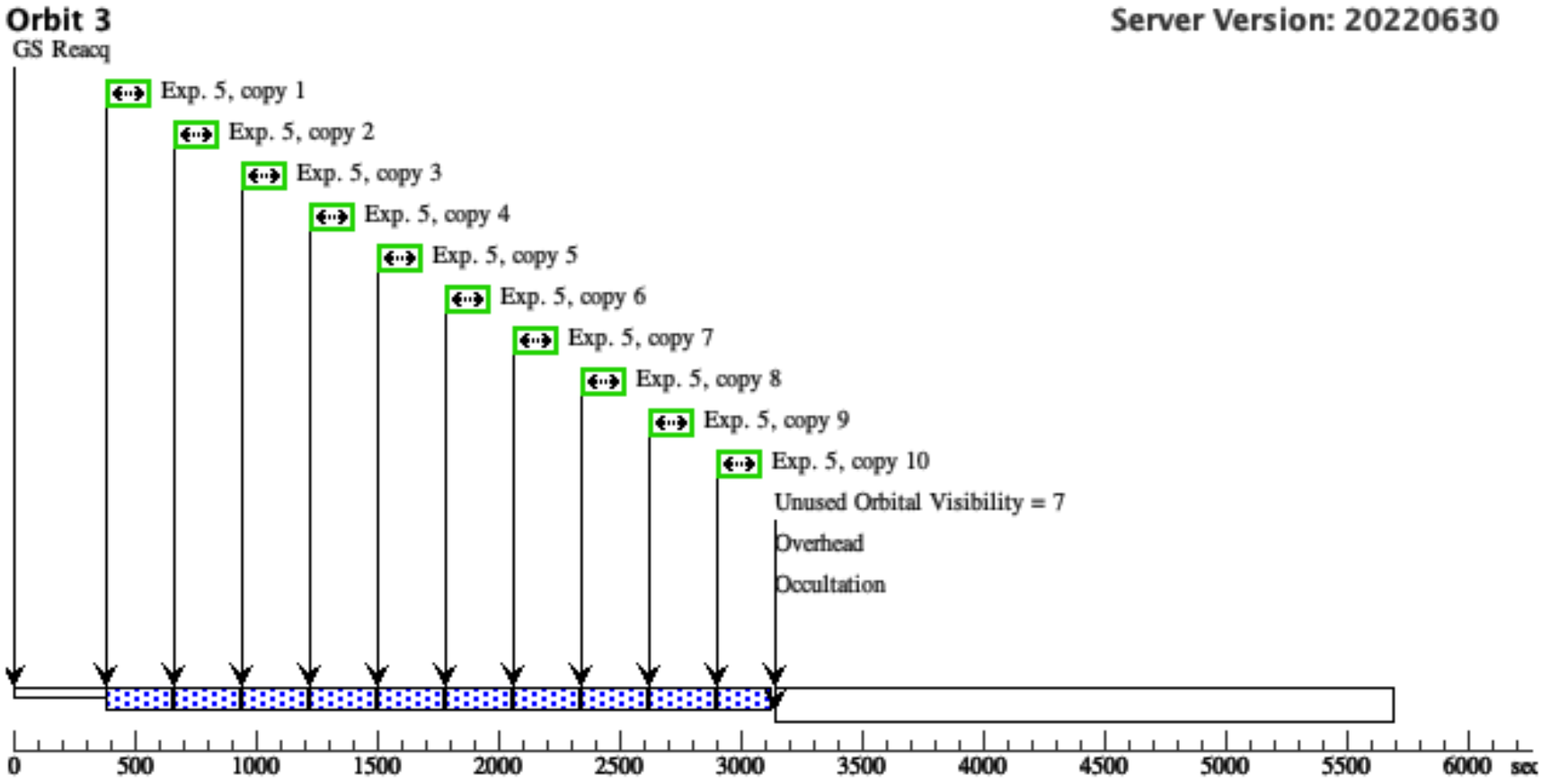
5500
6000
sec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Exp. 5, copy 6
Exp. 5, copy 7
Exp. 5, copy 8
Exp. 5, copy 9
Exp. 5, copy 10
Unused Orbital Visibility = 7
Overhead
Occultation
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1500
2000
2500
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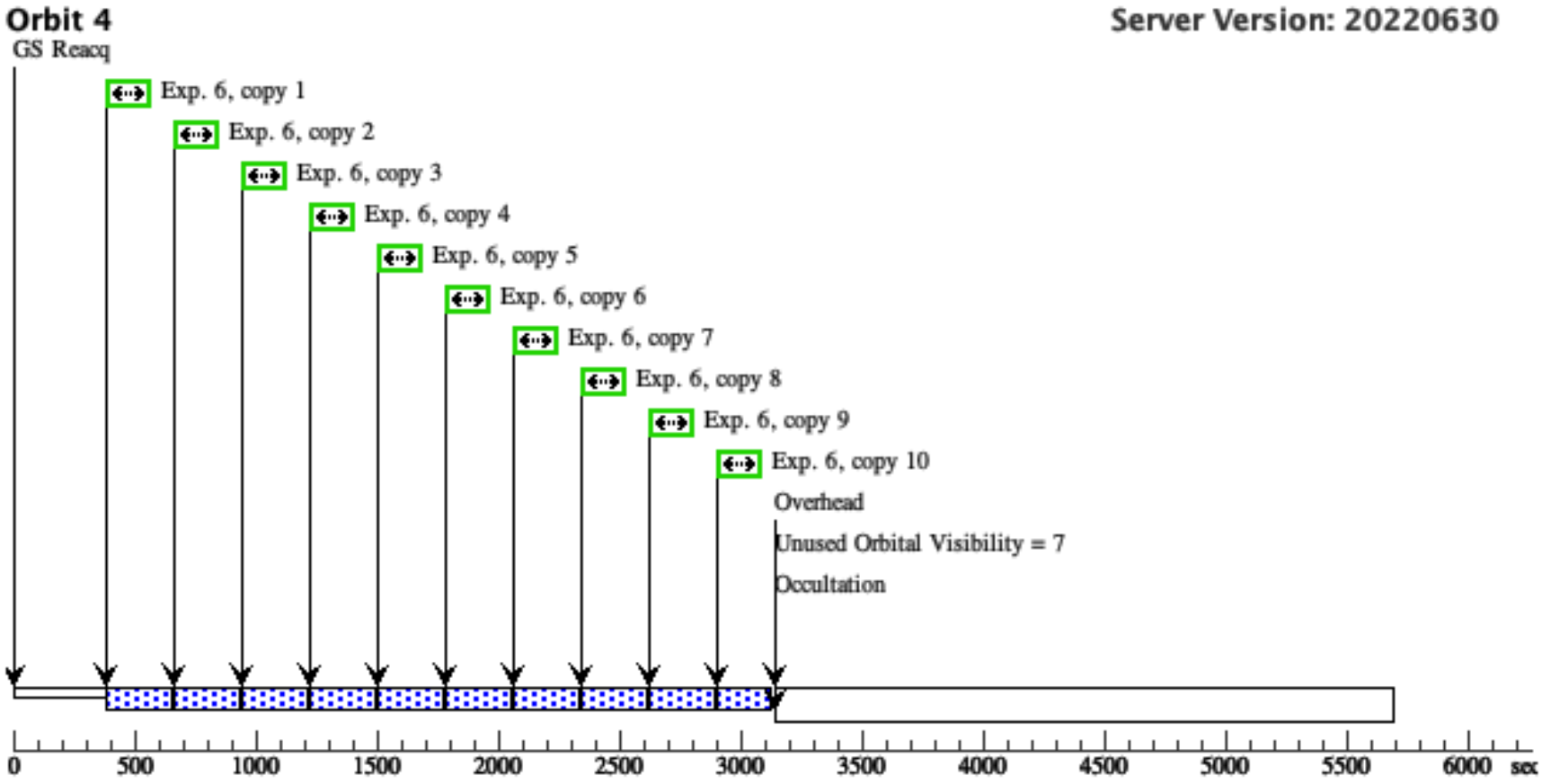
3500
4000
4500
5000
5500
6000
sec


Orbit 4
Server Version: 20220630
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Exp. 6, copy 6
Exp. 6, copy 7
Exp. 6, copy 8
Exp. 6, copy 9
Exp. 6, copy 10
Overhead
Unused Orbital Visibility = 7
Occultation
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500
1000
1500
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2500
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3500
4000
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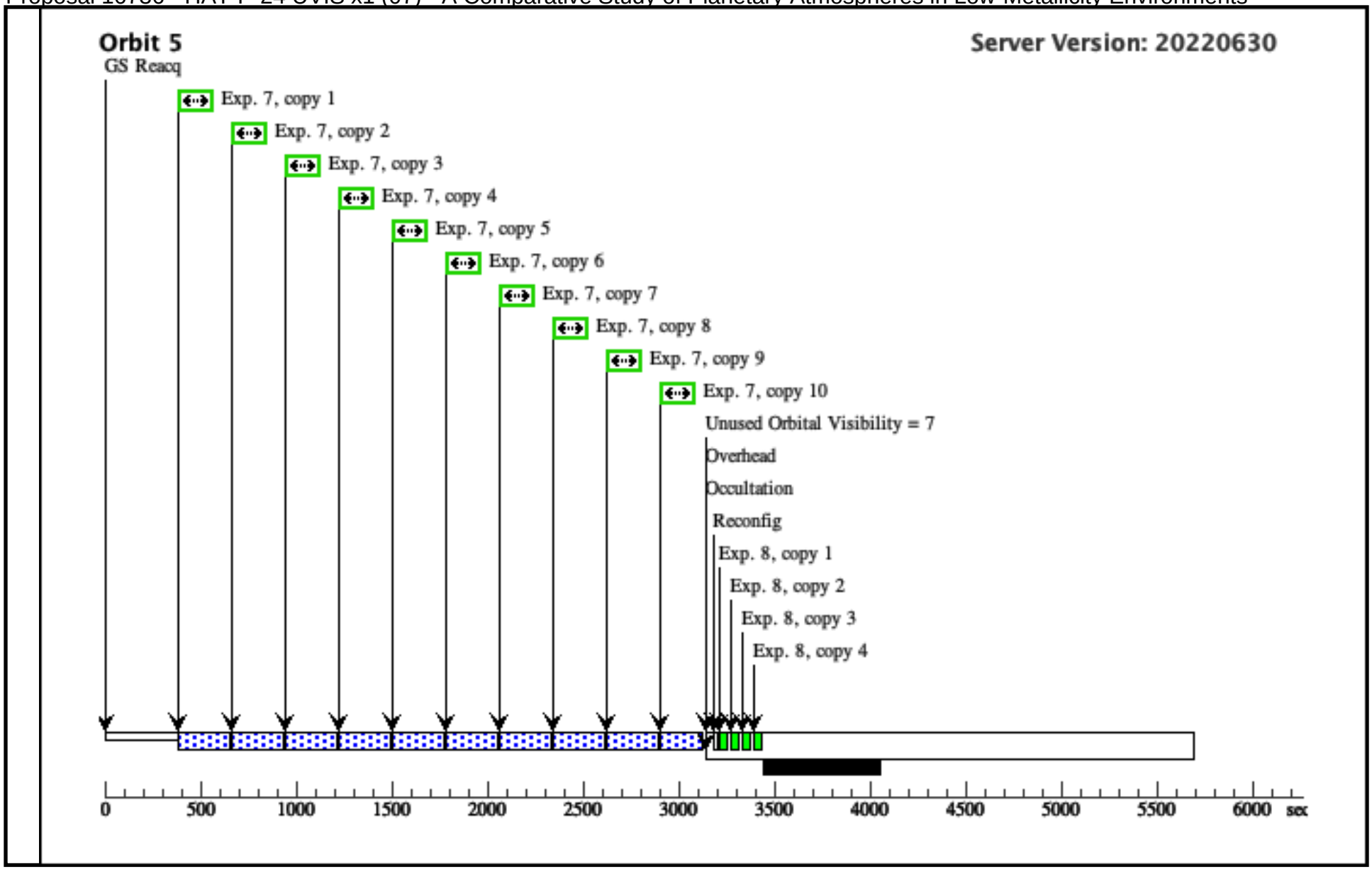
5000
5500
6000
sec


Orbit 5
Server Version: 20220630
GS Reacq
Exp. 7, copy 1
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Exp. 7, copy 3
Exp. 7, copy 4
Exp. 7, copy 5
Exp. 7, copy 6
Exp. 7, copy 7
Exp. 7, copy 8
Exp. 7, copy 9
Exp. 7, copy 10
Unused Orbital Visibility = 7
Overhead
Occultation
Reconfig
Exp. 8, copy 1
Exp. 8, copy 2
Exp. 8, copy 3
Exp. 8, copy 4
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500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec

Visit

Proposal 16736, HAT-P-24 UVIS x1 (57), implementation Tue Aug 23 20:00:44 GMT 2022

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 60D TO 70 D; ORIENT 85D TO 134 D; ORIENT 145D TO 158 D; ORIENT 235D TO 243 D; ORIENT 270D TO 331 D; Period 3.3552450879 D AND ZERO-PHASE HJD2456938.2174007813

Comments: period updated from Literature with TESS transits

Diagnostics

(G280 image, chip2 (57.003)) 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 (57.004)) 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 (57.005)) 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 (57.006)) 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 (57.007)) 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
(2)	HAT-P-24	RA: 07 15 18.0194 (108.8250808d)	Proper Motion RA: 8.152 mas/yr	V=11.76	Reference Frame: SIMBAD
		Dec: +14 15 45.41 (14.26261d)	Proper Motion Dec: -1.716 mas/yr	J=10.797; H=10.589	
		Equinox: J2000	Epoch of Position: 2000.0		

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. F8
Category=EXT-STAR
Description=[EXTRA-SOLAR PLANETARY SYSTEM, F3-F9]

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.1529159)	(2) HAT-P-24	WFC3/UVIS, ACCUM, G280-REF	F300X	SIZEAXIS1=1500; SIZEAXIS2=500; CENTERAXIS1=2148; CENTERAXIS2=1200; FLASH=20	POS TARG 0.0,-50.0; PHASE 0.9432 TO 0.94742	Sequence 1-3 Non-Int in HAT-P-24 UVIS x1 (57)	15 Secs (15 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 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 reference image (F300X) subarray on chip 2, phase constrained (WFC3UVIS.im.1529159)	(2) HAT-P-24	WFC3/UVIS, ACCUM, G280-REF	F300X	SIZEAXIS1=1500; SIZEAXIS2=500; CENTERAXIS1=2148; CENTERAXIS2=1200; FLASH=20	POS TARG 0.0,-50.0	Sequence 1-3 Non-Int in HAT-P-24 UVIS x1 (57)	15 Secs X 2 (30 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]*	***[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 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
3	G280 image, chip2 (WFC3UVIS.im.1529164)	(2) HAT-P-24	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 1-3 Non-Int in HAT-P-24 UVIS x1 (57)	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"). \These parameters are based upon similar observations obtained successfully in proposal 13574.

4	G280 image, (2) HAT-P-24 chip2 (WFC3UVIS.im.1529164)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 4-4 Non-Int in HAT-P-24 UVIS x1 (57)	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=1500 and SIZEAXIS2=500 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"). \These parameters are based upon similar observations obtained successfully in proposal 13574.

5	G280 image, (2) HAT-P-24 chip2 (WFC3UVIS.im.1529164)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 5-5 Non-Int in HAT-P-24 UVIS x1 (57)	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=1500 and SIZEAXIS2=500 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"). \These parameters are based upon similar observations obtained successfully in proposal 13574.

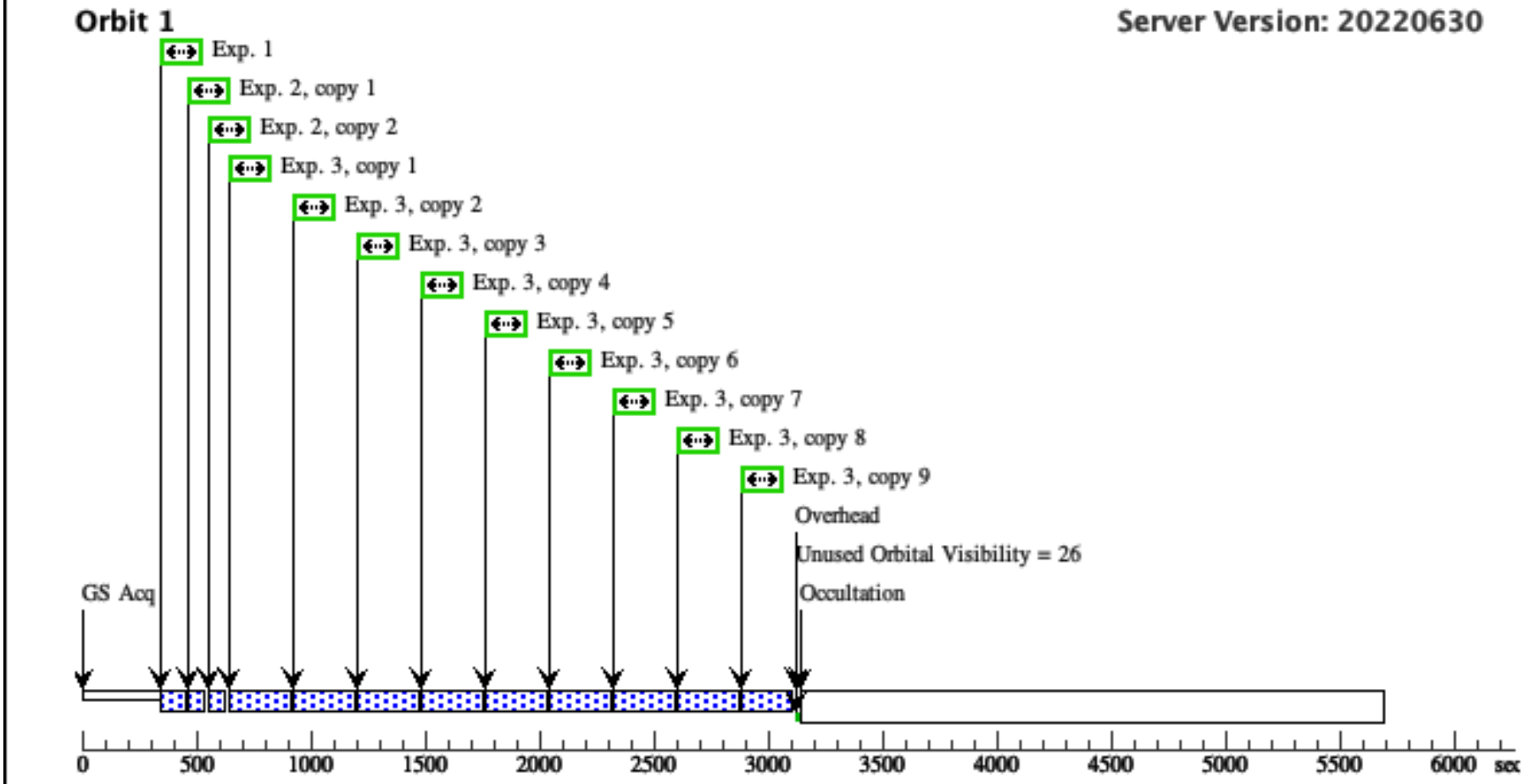
6	G280 image, (2) HAT-P-24 chip2 (WFC3UVIS.im.1529164)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 6-6 Non-Int in HAT-P-24 UVIS x1 (57)	222 Secs X 10 (2220 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]*	***[4]***

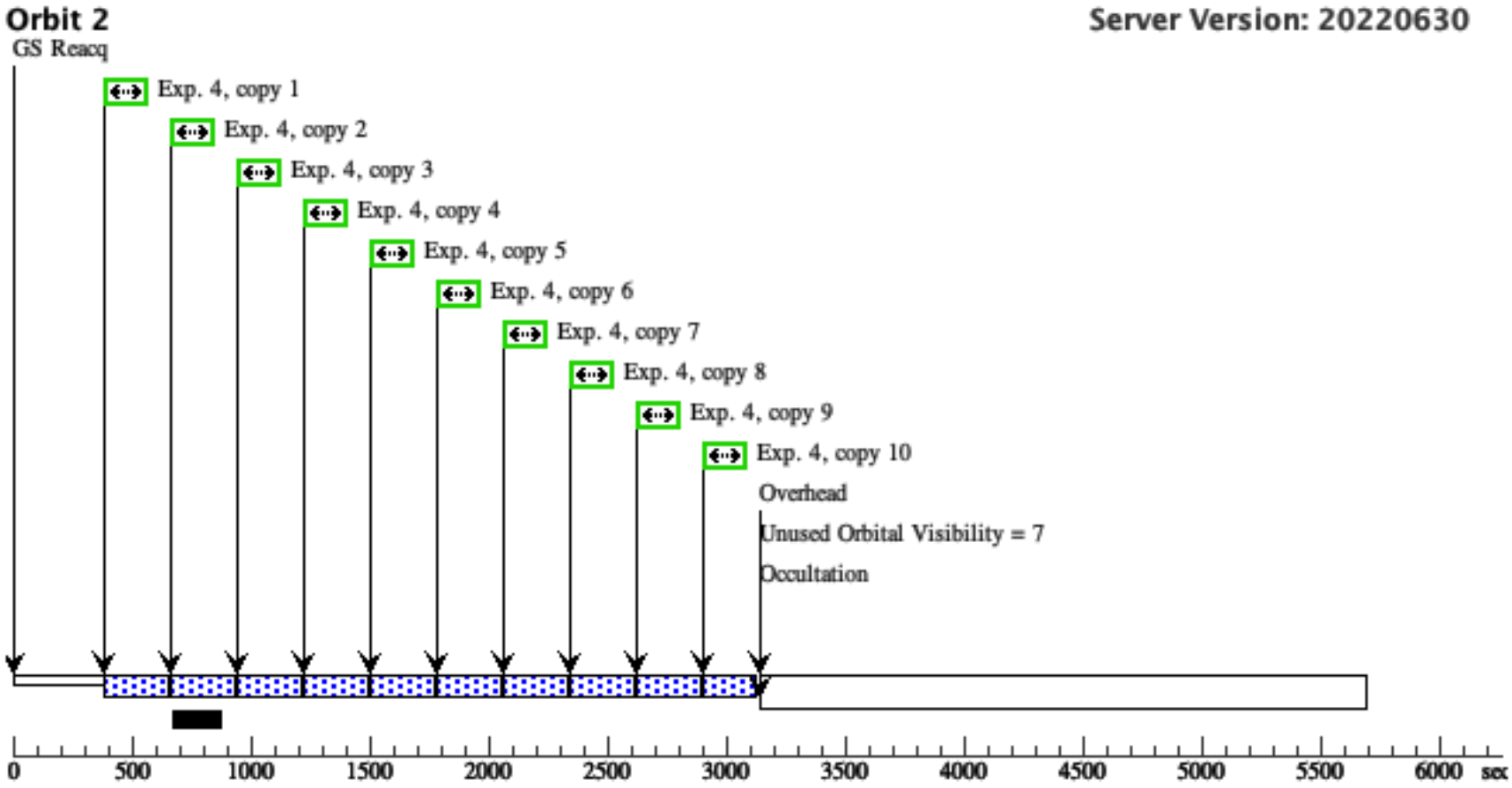
Comments: Nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of subarray on chip 2.

SIZEAXIS1=1500 and SIZEAXIS2=500 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"). \These parameters are based upon similar observations obtained successfully in proposal 13574.

	7	G280 image, chip2 (WFC3UVIS.im.1529164)	(2) HAT-P-24	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 7-8 Non-Int in HAT-P-24 UVIS x1 (57)	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)]*	***[5]***
	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=1500 and SIZEAXIS2=500 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"). \These parameters are based upon similar observations obtained successfully in proposal 13574.*									
	8	Bias	BIAS	WFC3/UVIS, ACCUM, UVIS	DEF	SIZEAXIS1=1500; SIZEAXIS2=500; CENTERAXIS1=2148; CENTERAXIS2=1200		Sequence 7-8 Non-Int in HAT-P-24 UVIS x1 (57)	0.0 Secs X 4 (0 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	***[5]***
	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. 4, copy 8
Exp. 4, copy 9
Exp. 4, copy 10
Overhead
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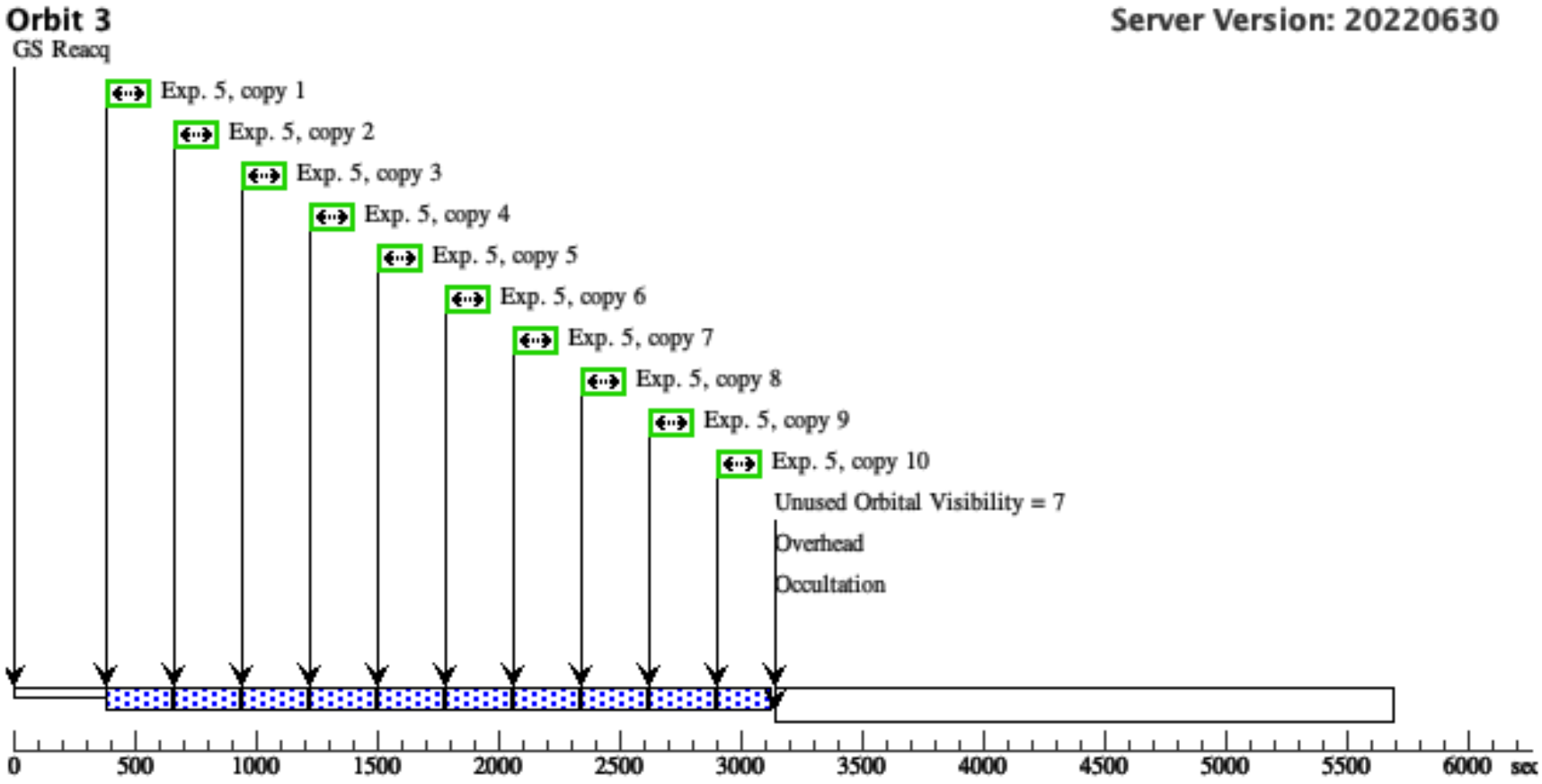
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Exp. 5, copy 5
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Exp. 5, copy 9
Exp. 5, copy 10
Unused Orbital Visibility = 7
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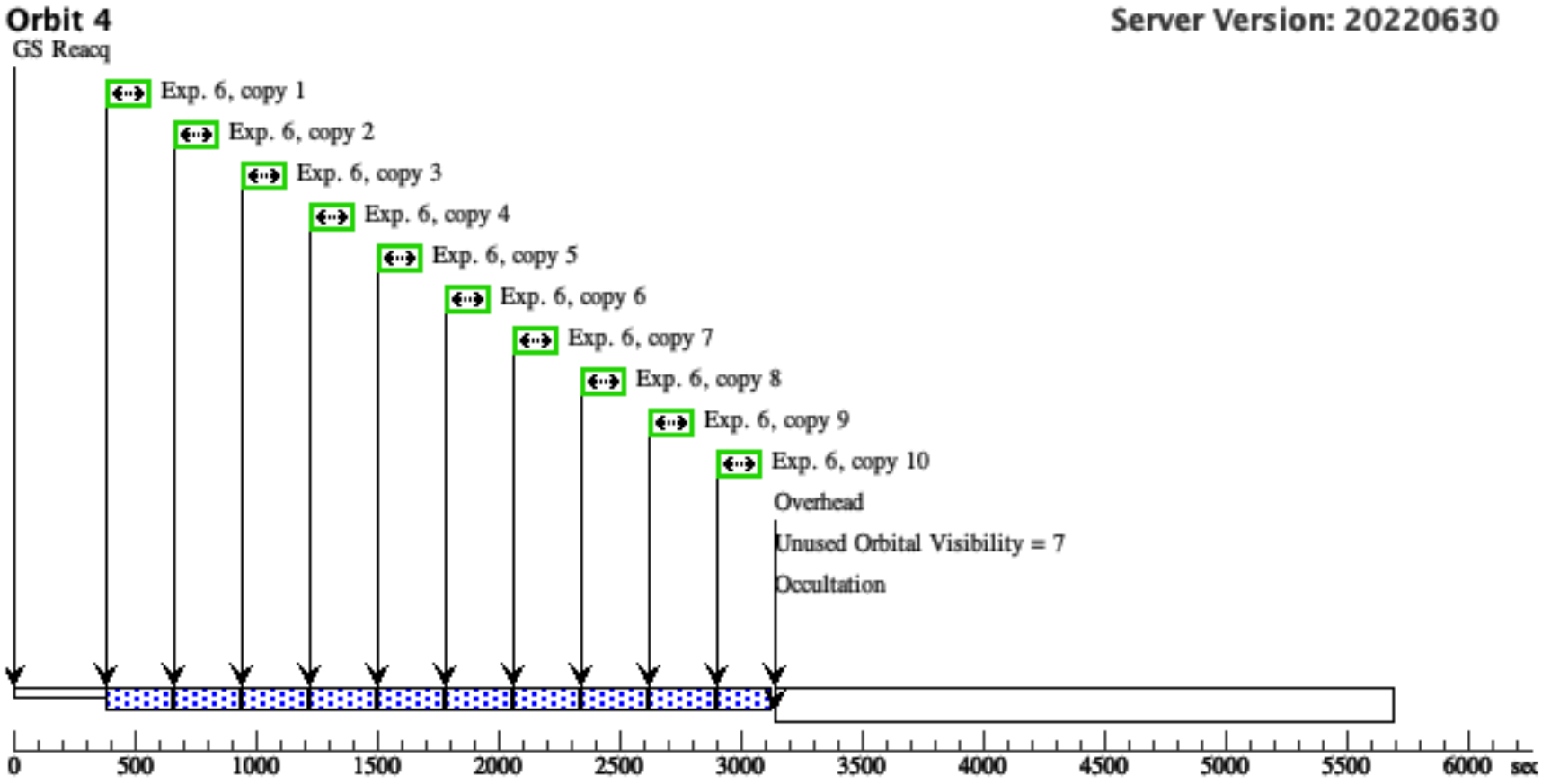
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Server Version: 20220630
GS Reacq
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Exp. 6, copy 4
Exp. 6, copy 5
Exp. 6, copy 6
Exp. 6, copy 7
Exp. 6, copy 8
Exp. 6, copy 9
Exp. 6, copy 10
Overhead
Unused Orbital Visibility = 7
Occultation
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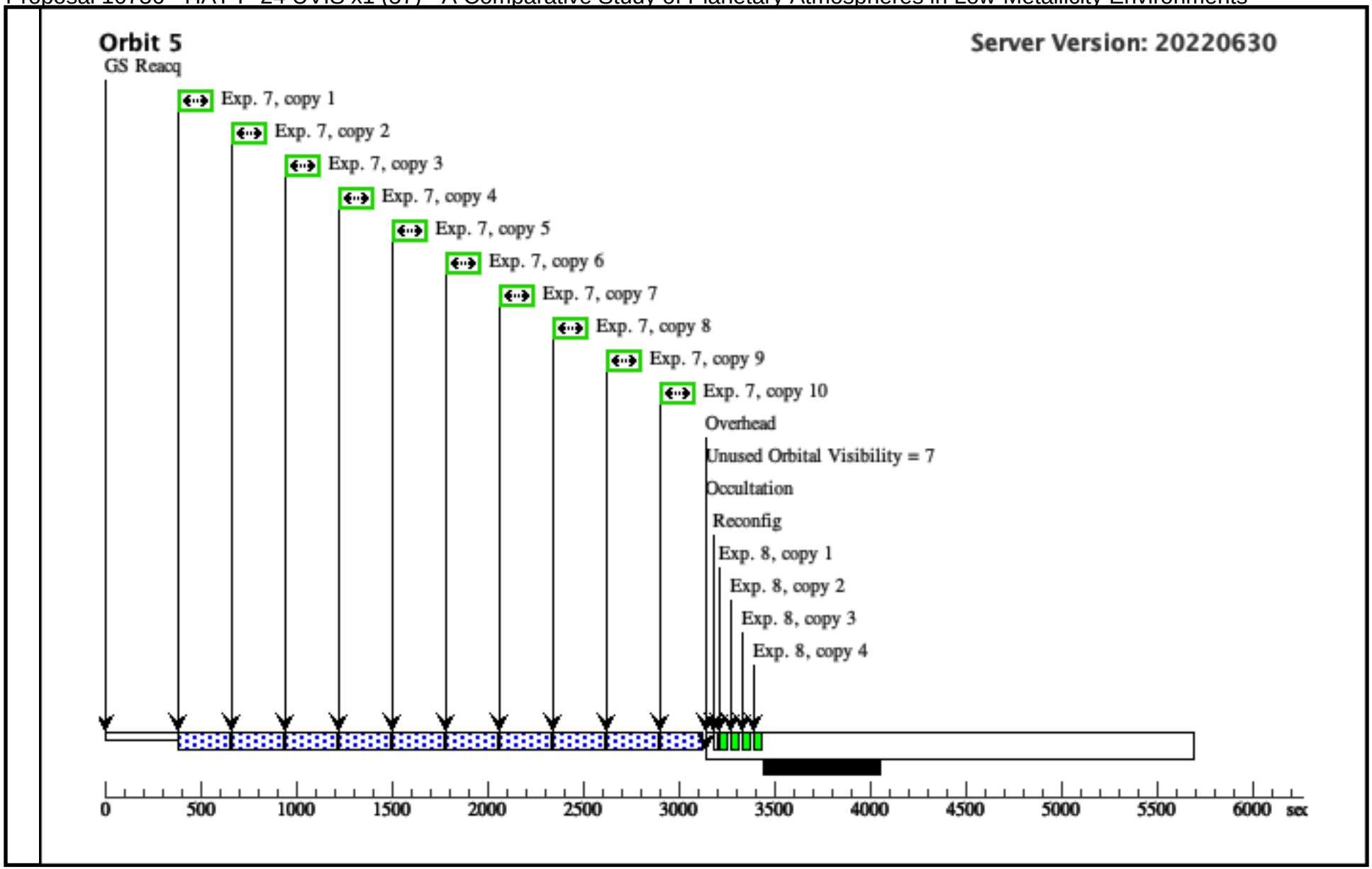
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Server Version: 20220630
GS Reacq
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Exp. 8, copy 3
Exp. 8, copy 4
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sec

Visit

Proposal 16736, HAT-P-24 UVIS x2 (15), completed Tue Aug 23 20:00:44 GMT 2022

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 60D TO 70 D; ORIENT 85D TO 134 D; ORIENT 145D TO 158 D; ORIENT 235D TO 243 D; ORIENT 270D TO 331 D; Period 3.3552450879 D AND ZERO-PHASE HJD2456938.2174007813

Diagnostics

(G280 image, chip2 (15.003)) 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 (15.004)) 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 (15.005)) 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 (15.006)) 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 (15.007)) 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
(2)	HAT-P-24	RA: 07 15 18.0194 (108.8250808d)	Proper Motion RA: 8.152 mas/yr	V=11.76	Reference Frame: SIMBAD
		Dec: +14 15 45.41 (14.26261d)	Proper Motion Dec: -1.716 mas/yr	J=10.797; H=10.589	
		Equinox: J2000	Epoch of Position: 2000.0		

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. F8
Category=EXT-STAR
Description=[EXTRA-SOLAR PLANETARY SYSTEM, F3-F9]

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.1529159)	(2) HAT-P-24	WFC3/UVIS, ACCUM, G280-REF	F300X	SIZEAXIS1=1500; SIZEAXIS2=500; CENTERAXIS1=2148; CENTERAXIS2=1200; FLASH=20	POS TARG 0.0,-50.0; PHASE 0.9432 TO 0.94742	Sequence 1-3 Non-Int in HAT-P-24 UVIS x2 (15)	15 Secs (15 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 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 reference image (F300X) subarray on chip 2, phase constrained (WFC3UVIS.im.1529159)	(2) HAT-P-24	WFC3/UVIS, ACCUM, G280-REF	F300X	SIZEAXIS1=1500; SIZEAXIS2=500; CENTERAXIS1=2148; CENTERAXIS2=1200; FLASH=20	POS TARG 0.0,-50.0	Sequence 1-3 Non-Int in HAT-P-24 UVIS x2 (15)	15 Secs X 2 (30 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]*	***[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 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
3	G280 image, chip2 (WFC3UVIS.im.1529164)	(2) HAT-P-24	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 1-3 Non-Int in HAT-P-24 UVIS x2 (15)	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=1500 and SIZEAXIS2=500 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"). \These parameters are based upon similar observations obtained successfully in proposal 13574.

4	G280 image, (2) HAT-P-24 chip2 (WFC3UVIS.im.1529164)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 4-4 Non-Int in HAT-P-24 UVIS x2 (15)	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=1500 and SIZEAXIS2=500 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"). \These parameters are based upon similar observations obtained successfully in proposal 13574.

5	G280 image, (2) HAT-P-24 chip2 (WFC3UVIS.im.1529164)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 5-5 Non-Int in HAT-P-24 UVIS x2 (15)	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=1500 and SIZEAXIS2=500 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"). These parameters are based upon similar observations obtained successfully in proposal 13574.

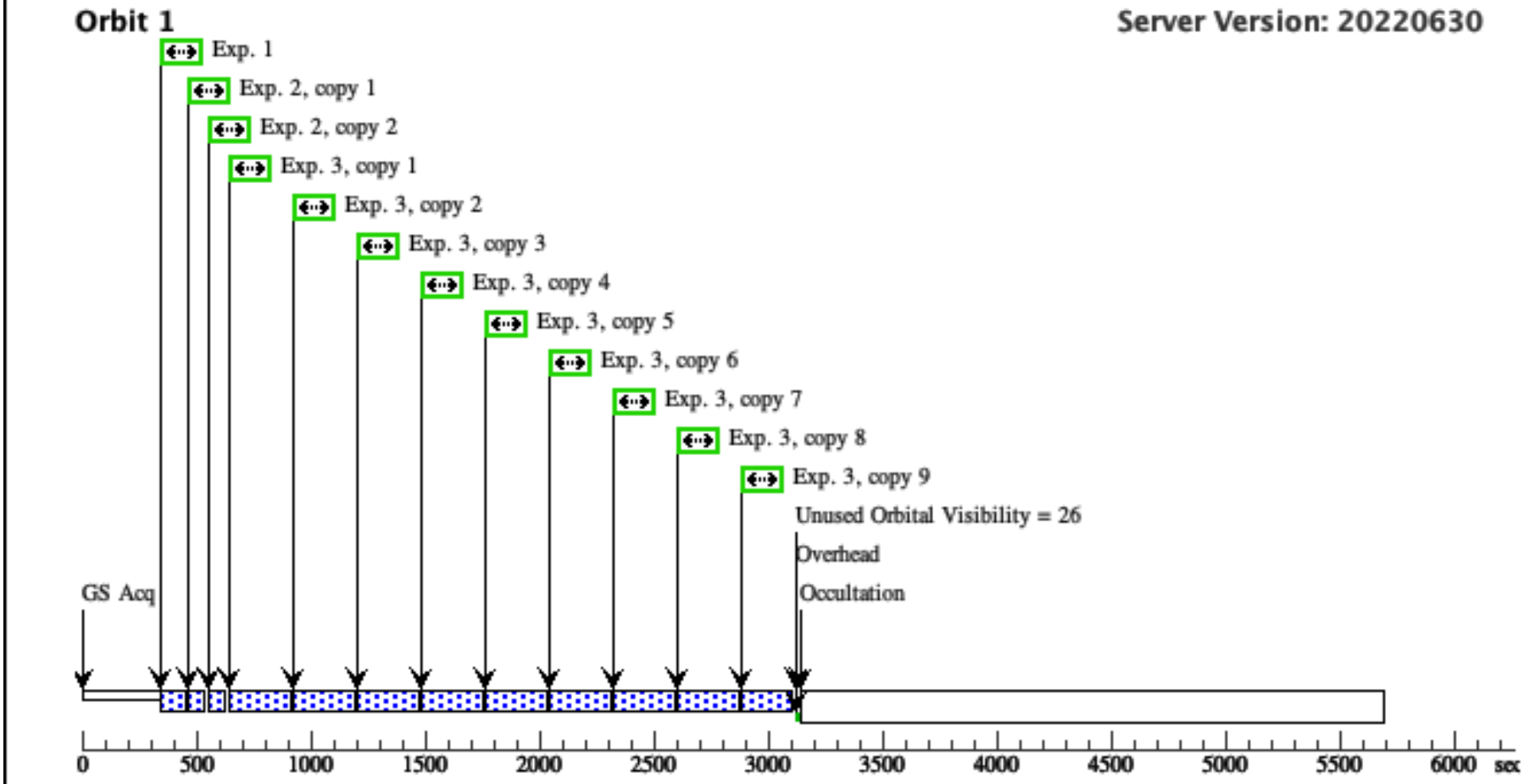
6	G280 image, (2) HAT-P-24 chip2 (WFC3UVIS.im.1529164)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 6-6 Non-Int in HAT-P-24 UVIS x2 (15)	222 Secs X 10 (2220 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]*	***[4]***

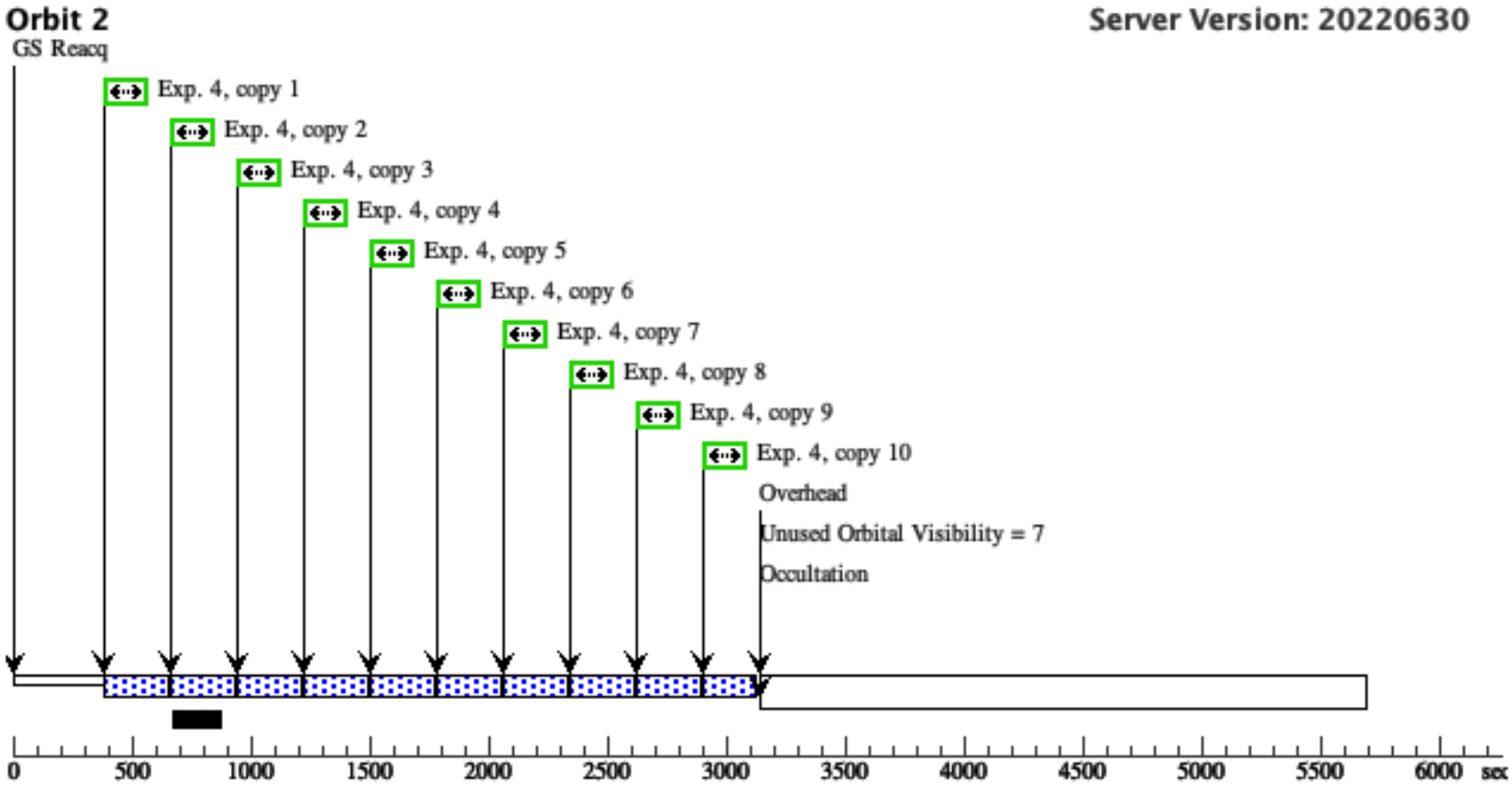
Comments: Nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of subarray on chip 2.

SIZEAXIS1=1500 and SIZEAXIS2=500 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"). \These parameters are based upon similar observations obtained successfully in proposal 13574.

	7	G280 image, chip2 (WFC3UVIS.im.1529164)	(2) HAT-P-24	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS2=500; CENTERAXIS2=1200; SIZEAXIS1=1500; CENTERAXIS1=2148	POS TARG 0.0,-50.0	Sequence 7-8 Non-Int in HAT-P-24 UVIS x2 (15)	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)]*	***[5]***
	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=1500 and SIZEAXIS2=500 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"). \These parameters are based upon similar observations obtained successfully in proposal 13574.*									
	8	Bias	BIAS	WFC3/UVIS, ACCUM, UVIS	DEF	SIZEAXIS1=1500; SIZEAXIS2=500; CENTERAXIS1=2148; CENTERAXIS2=1200		Sequence 7-8 Non-Int in HAT-P-24 UVIS x2 (15)	0.0 Secs X 4 (0 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	***[5]***
	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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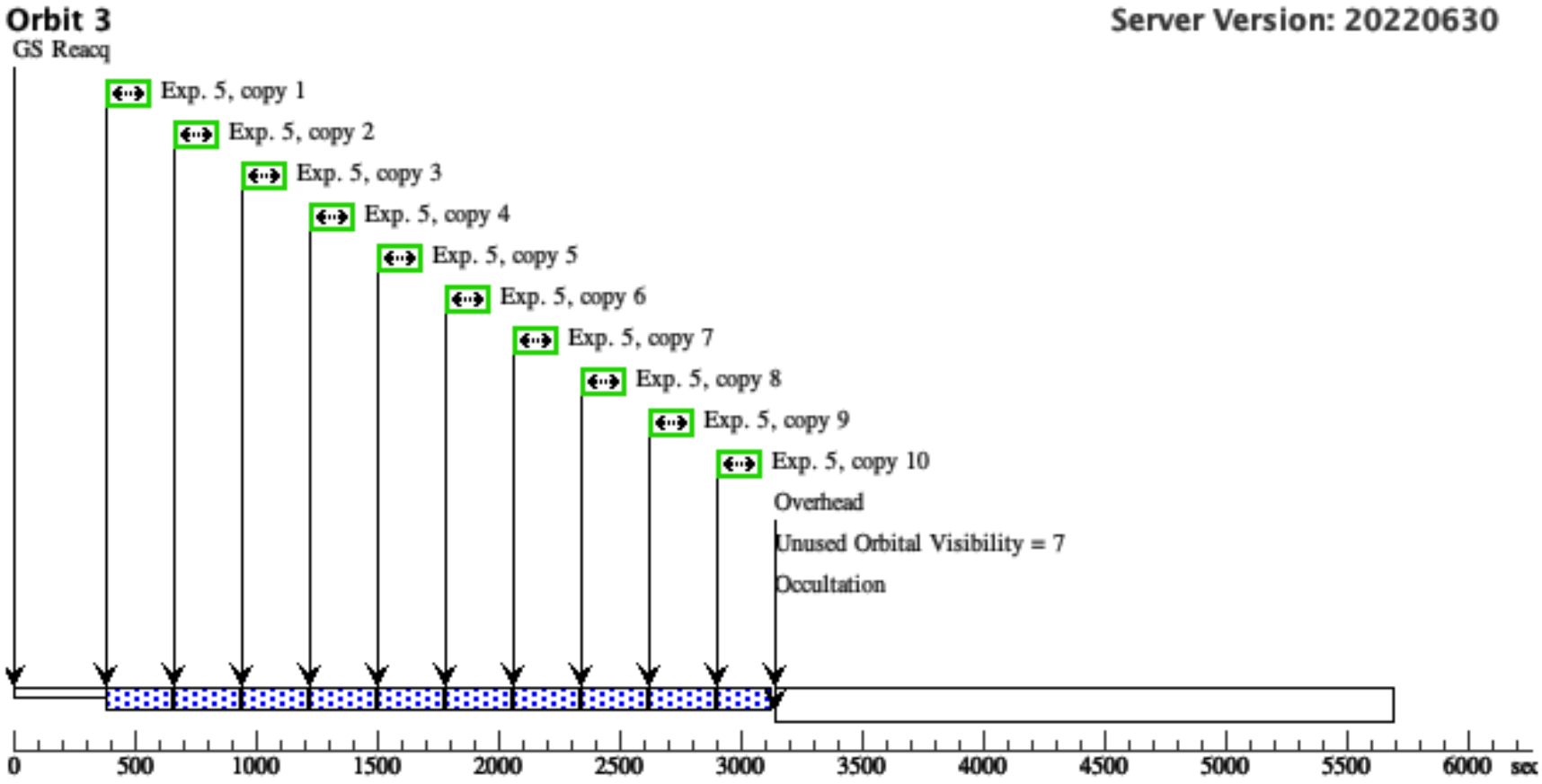
Exp. 4, copy 3
Exp. 4, copy 4
Exp. 4, copy 5
Exp. 4, copy 6
Exp. 4, copy 7
Exp. 4, copy 8
Exp. 4, copy 9
Exp. 4, copy 10
Overhead
Unused Orbital Visibility = 7
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec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Server Version: 20220630
GS Reacq
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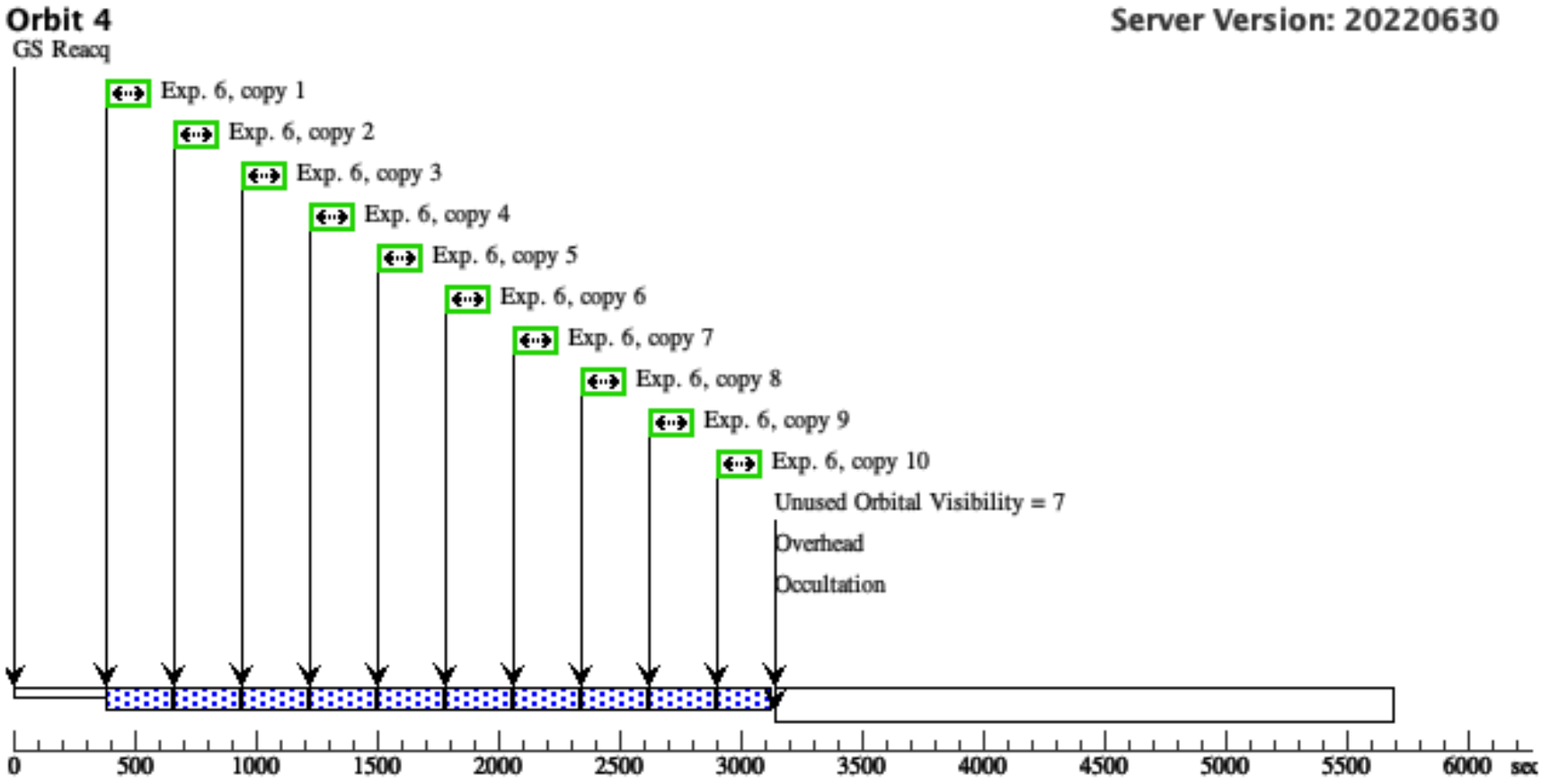
Exp. 5, copy 3
Exp. 5, copy 4
Exp. 5, copy 5
Exp. 5, copy 6
Exp. 5, copy 7
Exp. 5, copy 8
Exp. 5, copy 9
Exp. 5, copy 10
Overhead
Unused Orbital Visibility = 7
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec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Server Version: 20220630
GS Reacq
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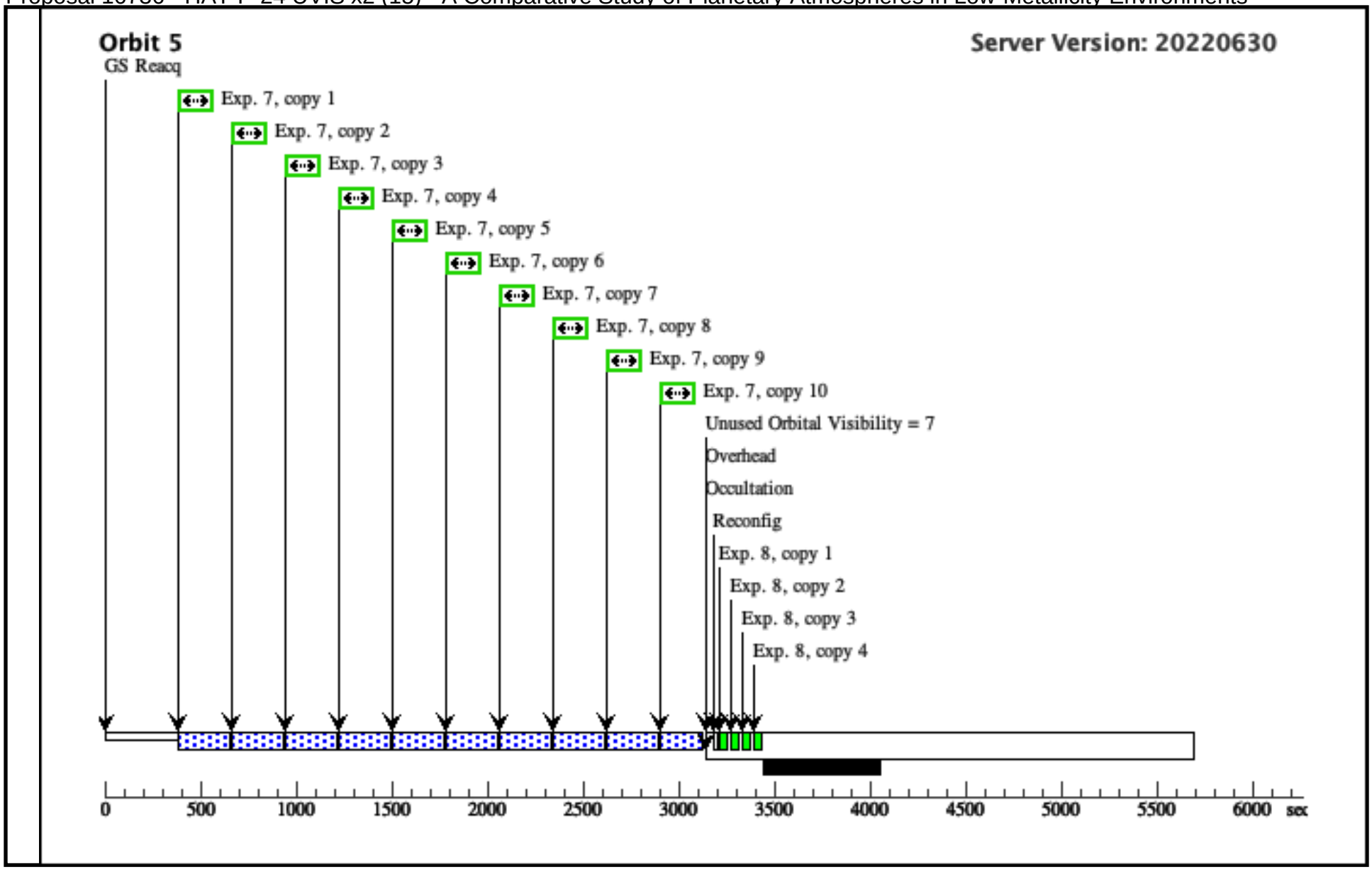
Exp. 6, copy 3
Exp. 6, copy 4
Exp. 6, copy 5
Exp. 6, copy 6
Exp. 6, copy 7
Exp. 6, copy 8
Exp. 6, copy 9
Exp. 6, copy 10
Unused Orbital Visibility = 7
Overhead
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec


Orbit 5
Server Version: 20220630
GS Reacq
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Exp. 7, copy 2
Exp. 7, copy 3
Exp. 7, copy 4
Exp. 7, copy 5
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Exp. 7, copy 8
Exp. 7, copy 9
Exp. 7, copy 10
Unused Orbital Visibility = 7
Overhead
Occultation
Reconfig
Exp. 8, copy 1
Exp. 8, copy 2
Exp. 8, copy 3
Exp. 8, copy 4
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec

Visit

Proposal 16736, HAT-P-24 WFC3/G141 Orbit 1 (10), implementation Tue Aug 23 20:00:44 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: SCHED 100%; ORIENT 62D TO 186 D; ORIENT 242D TO 6 D; Period 3.3552450879 D AND ZERO-PHASE HJD2456938.2174007813

Comments: WFC3/G141 time series transit observations consisiting of four consecutive HST orbits. Visits HAT-P-24 WFC3/G141 1, 2, 3 and 4 must be scheduled consecutively. The visits have been broken up in APT to force a buffer dump at the end of each orbit, which drastically increases the duty cycle, which is important for time-series observations.

-7" offset has been applied such that the target spatial scan is near the middle of the 256 subarray.

Orientation requirements are placed to avoid a nearby fainter red companion, located about 5" south of the target and visible in a SDSS image. PA of the comanion is 189.45 degrees.

Fixed Targets

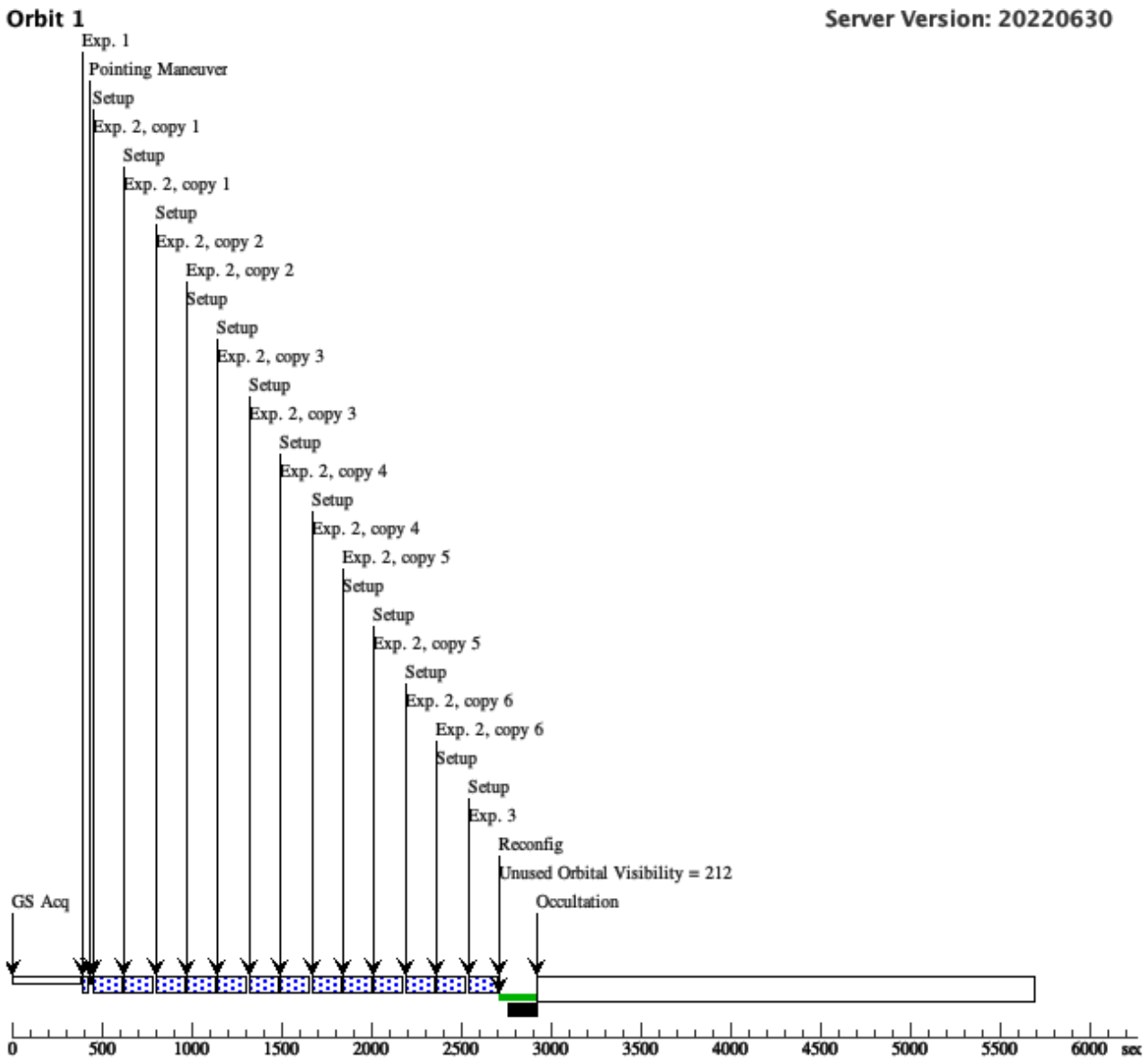
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	HAT-P-24	RA: 07 15 18.0194 (108.8250808d) Dec: +14 15 45.41 (14.26261d) Equinox: J2000	Proper Motion RA: 8.152 mas/yr Proper Motion Dec: -1.716 mas/yr Epoch of Position: 2000.0	V=11.76 J=10.797; H=10.589	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. F8
Category=EXT-STAR
Description=[EXTRA-SOLAR PLANETARY SYSTEM, F3-F9]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Acquisition DI, phase constrained (WFC3IR.im.1529892)	(2) HAT-P-24	WFC3/IR, MULTIACCUM, GRISM256	F127M	SAMP-SEQ=RAPID; NSAMP=4	POS TARG null,-7; PHASE 0.9432 TO 0.94742	Sequence 1-3 Non-Int in HAT-P-24 WFC 3/G141 Orbit 1 (10)	1.11126 Secs (1.111 Secs) *[==>]*	***[1]***
	Comments: Direct filter image to assist with wavelength calibration. Image is only used to find the reference detctor possition. Filter chosen to be in G141 wavelength range and give high SNR in a short exposure.								
2	Orbit 1 - Science Scans x 7 Round-trip (WFC3IR.ss.1529897)	(2) HAT-P-24	WFC3/IR, MULTIACCUM, GRISM256	G141	SAMP-SEQ=SPARS25; NSAMP=7	POS TARG null,-7; SPATIAL SCAN 0.0 236737,90.0 Degrees ,Round trip	Sequence 1-3 Non-Int in HAT-P-24 WFC 3/G141 Orbit 1 (10)	134.354049 Secs X 6 (1612.249 Secs) *[==>(Copy 1, Forward)]* *[==>(Copy 1, Reverse)]* *[==>(Copy 2, Forward)]* *[==>(Copy 2, Reverse)]* *[==>(Copy 3, Forward)]* *[==>(Copy 3, Reverse)]* *[==>(Copy 4, Forward)]* *[==>(Copy 4, Reverse)]* *[==>(Copy 5, Forward)]* *[==>(Copy 5, Reverse)]* *[==>(Copy 6, Forward)]* *[==>(Copy 6, Reverse)]*	***[1]***
3	Orbit 1 - Science Scans x 7 Round-trip (WFC3IR.ss.1529897)	(2) HAT-P-24	WFC3/IR, MULTIACCUM, GRISM256	G141	SAMP-SEQ=SPARS25; NSAMP=7	POS TARG null,-7; SPATIAL SCAN 0.0 236737,90.0 Degrees ,Forward	Sequence 1-3 Non-Int in HAT-P-24 WFC 3/G141 Orbit 1 (10)	134.354049 Secs (134.354 Secs) *[==>]*	***[1]***

Orbit Structure



Visit

Proposal 16736, HAT-P-24 WFC3/G141 Orbit 2 (11), implementation Tue Aug 23 20:00:44 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: SCHED 100%; SAME ORIENT AS 10; AFTER 10 BY 0.9 Orbits TO 1.1 Orbits

Comments: Second orbit of G141 transit. Must be scheduled directly after HAT-P-24 WFC3/G102 Orbit 1 (10).

Fixed Targets

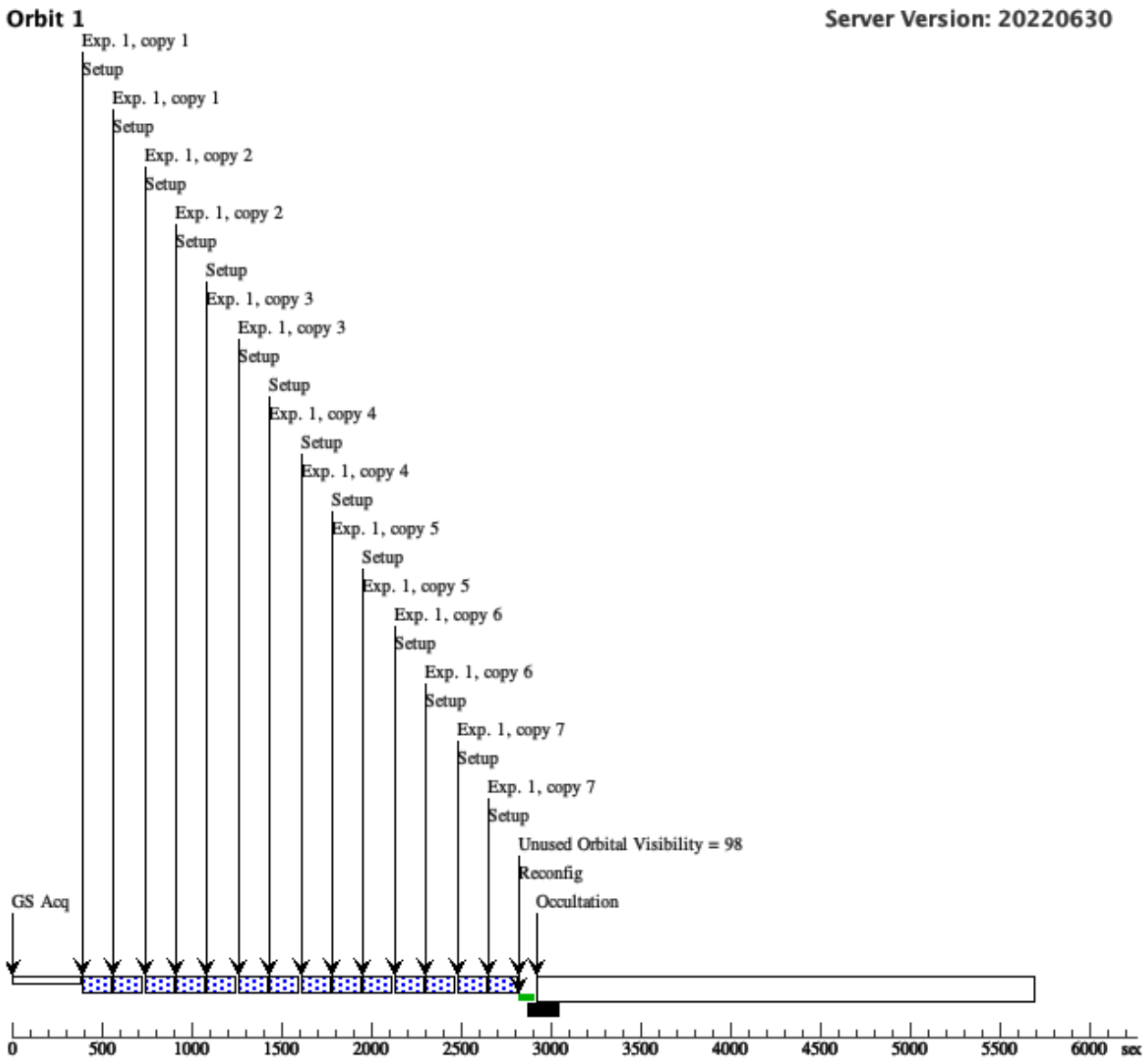
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	HAT-P-24	RA: 07 15 18.0194 (108.8250808d) Dec: +14 15 45.41 (14.26261d) Equinox: J2000	Proper Motion RA: 8.152 mas/yr Proper Motion Dec: -1.716 mas/yr Epoch of Position: 2000.0	V=11.76 J=10.797; H=10.589	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. F8
Category=EXT-STAR
Description=[EXTRA-SOLAR PLANETARY SYSTEM, F3-F9]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Orbit 3 - Science Scans x 7 Round-trip	(2) HAT-P-24	WFC3/IR, MULTIACCUM, GRISM256	G141	SAMP-SEQ=SPARS25; NSAMP=7	POS TARG null,-7; SPATIAL SCAN 0.0 236737,90.0 Degrees ,Round trip	Sequence 1-1 Non-Int in HAT-P-24 WFC3/G141 Orbit 2 (11)	134.354049 Secs X 7 (1880.957 Secs) *[==>(Copy 1, Forward)]* *[==>(Copy 1, Reverse)]* *[==>(Copy 2, Forward)]* *[==>(Copy 2, Reverse)]* *[==>(Copy 3, Forward)]* *[==>(Copy 3, Reverse)]* *[==>(Copy 4, Forward)]* *[==>(Copy 4, Reverse)]* *[==>(Copy 5, Forward)]* *[==>(Copy 5, Reverse)]* *[==>(Copy 6, Forward)]* *[==>(Copy 6, Reverse)]* *[==>(Copy 7, Forward)]* *[==>(Copy 7, Reverse)]*	***[1]***

Orbit Structure



Visit

Proposal 16736, HAT-P-24 WFC3/G141 Orbit 3 (12), implementation Tue Aug 23 20:00:44 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: SCHED 100%; SAME ORIENT AS 10; AFTER 11 BY 0.9 Orbits TO 1.1 Orbits

Comments: Third orbit of G141 transit. Must be scheduled directly after HAT-P-24 WFC3/G102 Orbit 2 (12).

Fixed Targets

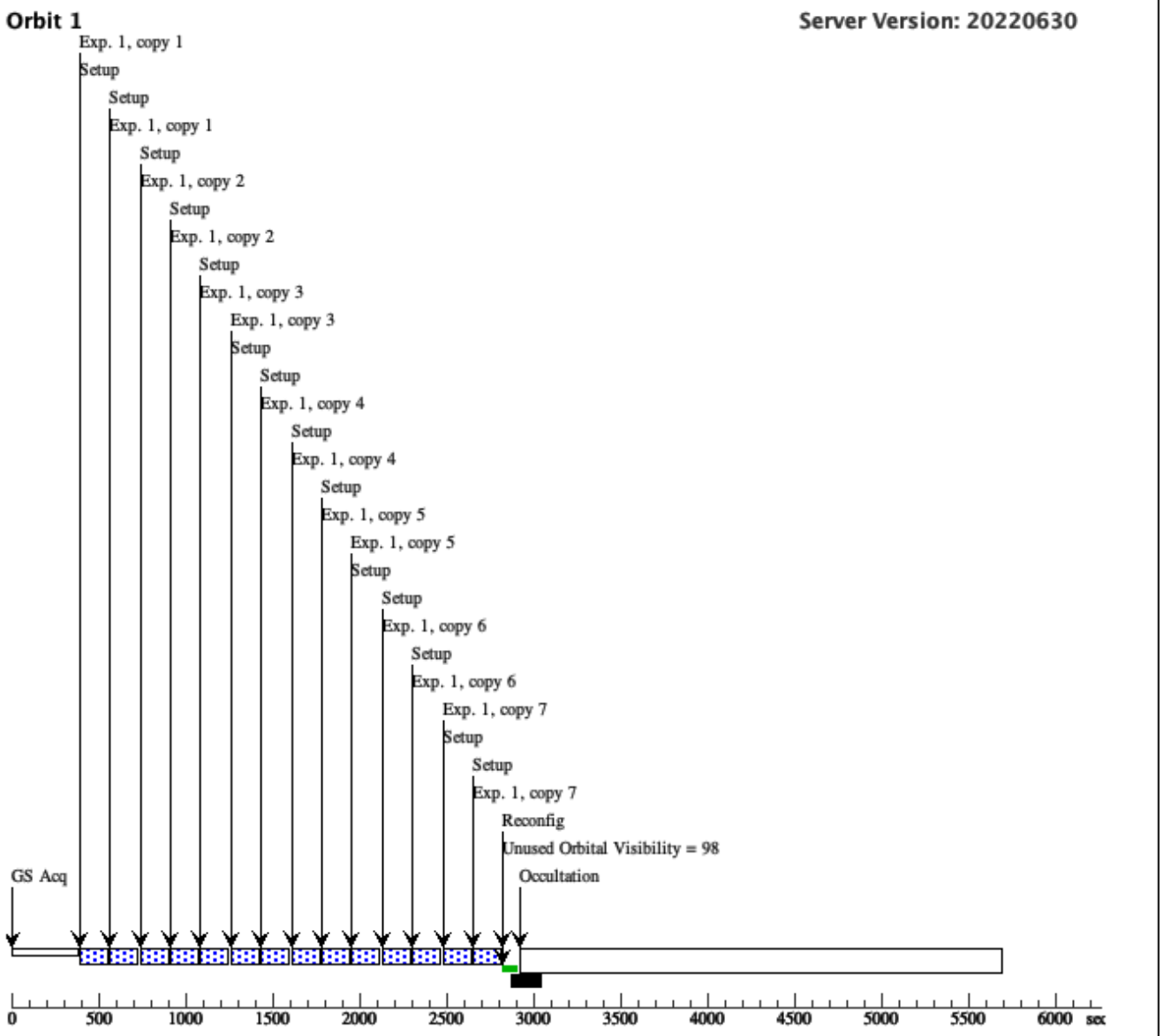
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	HAT-P-24	RA: 07 15 18.0194 (108.8250808d)	Proper Motion RA: 8.152 mas/yr	V=11.76	Reference Frame: SIMBAD
		Dec: +14 15 45.41 (14.26261d)	Proper Motion Dec: -1.716 mas/yr	J=10.797; H=10.589	
		Equinox: J2000	Epoch of Position: 2000.0		

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. F8
Category=EXT-STAR
Description=[EXTRA-SOLAR PLANETARY SYSTEM, F3-F9]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Orbit 3 - Science Scans x 7 Round-trip	(2) HAT-P-24	WFC3/IR, MULTIACCUM, GRISM256	G141	SAMP-SEQ=SPARS25; NSAMP=7	POS TARG null,-7; SPATIAL SCAN 0.0 236737,90.0 Degrees ,Round trip	Sequence 1-1 Non-Int in HAT-P-24 WFC3/G141 Orbit 3 (12)	134.354049 Secs X 7 (1880.957 Secs) *[==>(Copy 1, Forward)]* *[==>(Copy 1, Reverse)]* *[==>(Copy 2, Forward)]* *[==>(Copy 2, Reverse)]* *[==>(Copy 3, Forward)]* *[==>(Copy 3, Reverse)]* *[==>(Copy 4, Forward)]* *[==>(Copy 4, Reverse)]* *[==>(Copy 5, Forward)]* *[==>(Copy 5, Reverse)]* *[==>(Copy 6, Forward)]* *[==>(Copy 6, Reverse)]* *[==>(Copy 7, Forward)]* *[==>(Copy 7, Reverse)]*	***[1]***

Orbit Structure



Visit

Proposal 16736, HAT-P-24 WFC3/G141 Orbit 4 (13), implementation Tue Aug 23 20:00:44 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: SCHED 100%; SAME ORIENT AS 10; AFTER 12 BY 0.9 Orbits TO 1.1 Orbits

Comments: Fourth orbit of G141 transit. Must be scheduled directly after WASP-98 WFC3/G102 Orbit 3 (13).

Fixed Targets

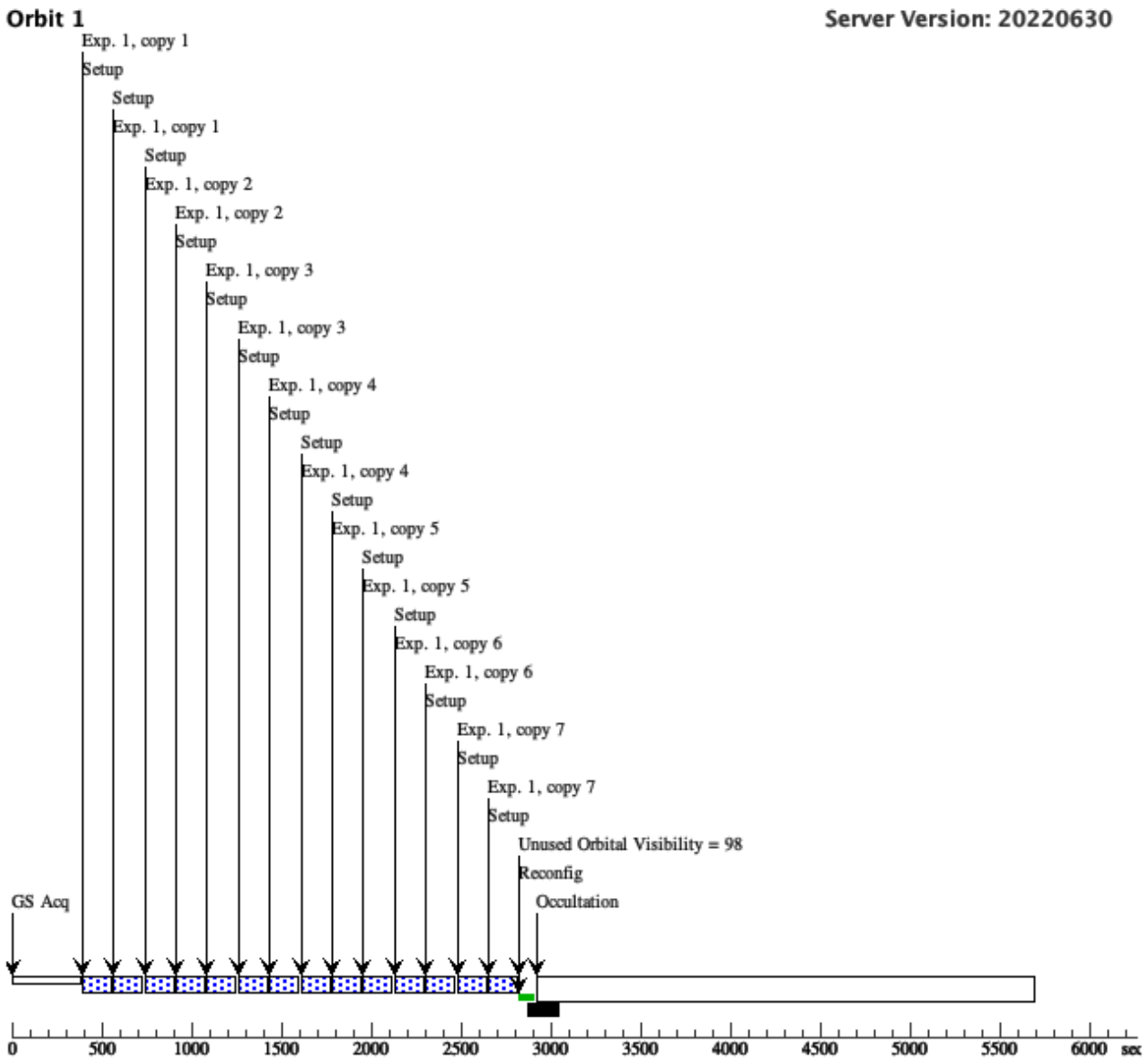
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	HAT-P-24	RA: 07 15 18.0194 (108.8250808d)	Proper Motion RA: 8.152 mas/yr	V=11.76	Reference Frame: SIMBAD
		Dec: +14 15 45.41 (14.26261d)	Proper Motion Dec: -1.716 mas/yr	J=10.797; H=10.589	
		Equinox: J2000	Epoch of Position: 2000.0		

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. F8
Category=EXT-STAR
Description=[EXTRA-SOLAR PLANETARY SYSTEM, F3-F9]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Orbit 4 - Science Scans x 7 Round-trip	(2) HAT-P-24	WFC3/IR, MULTIACCUM, GRISM256	G141	SAMP-SEQ=SPARS25; NSAMP=7	POS TARG null,-7; SPATIAL SCAN 0.0236737,90.0 Degrees ,Round trip	Sequence 1-1 Non-Int in HAT-P-24 WFC3/G141 Orbit 4 (13)	134.354049 Secs X 7 (1880.957 Secs) *[==>(Copy 1, Forward)]* *[==>(Copy 1, Reverse)]* *[==>(Copy 2, Forward)]* *[==>(Copy 2, Reverse)]* *[==>(Copy 3, Forward)]* *[==>(Copy 3, Reverse)]* *[==>(Copy 4, Forward)]* *[==>(Copy 4, Reverse)]* *[==>(Copy 5, Forward)]* *[==>(Copy 5, Reverse)]* *[==>(Copy 6, Forward)]* *[==>(Copy 6, Reverse)]* *[==>(Copy 7, Forward)]* *[==>(Copy 7, Reverse)]*	***[1]***

Orbit Structure



Visit

Proposal 16736, HAT-P-24 WFC3/G141 Orbit 5 (14), implementation Tue Aug 23 20:00:44 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: SCHED 100%; SAME ORIENT AS 10; AFTER 13 BY 0.9 Orbits TO 1.1 Orbits

Comments: Fifth orbit of G141 transit. Must be scheduled directly after HAT-P-24 WFC3/G102 Orbit 3 (14).

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	HAT-P-24	RA: 07 15 18.0194 (108.8250808d)	Proper Motion RA: 8.152 mas/yr	V=11.76	Reference Frame: SIMBAD
		Dec: +14 15 45.41 (14.26261d)	Proper Motion Dec: -1.716 mas/yr	J=10.797; H=10.589	
		Equinox: J2000	Epoch of Position: 2000.0		

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. F8
Category=EXT-STAR
Description=[EXTRA-SOLAR PLANETARY SYSTEM, F3-F9]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Orbit 5 - Science Scans x 7 Round-trip	(2) HAT-P-24	WFC3/IR, MULTIACCUM, GRISM256	G141	SAMP-SEQ=SPARS25; NSAMP=7	POS TARG null,-7; SPATIAL SCAN 0.0 236737,90.0 Degrees ,Round trip	Sequence 1-1 Non-Int in HAT-P-24 WFC3/G141 Orbit 5 (14)	134.354049 Secs X 7 (1880.957 Secs)	
								[==>(Copy 1, Forward)]	***[1]***
								[==>(Copy 1, Reverse)]	
								[==>(Copy 2, Forward)]	
								[==>(Copy 2, Reverse)]	
								[==>(Copy 3, Forward)]	
								[==>(Copy 3, Reverse)]	
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								[==>(Copy 5, Forward)]	
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								[==>(Copy 6, Forward)]	
								[==>(Copy 6, Reverse)]	
								[==>(Copy 7, Forward)]	
								[==>(Copy 7, Reverse)]	

Orbit Structure