17612 - JWST's Exoplanet Grand Tour Spectroscopic Survey

Cycle: 31, Proposal Category: GO

(Availability Mode: AVAILABLE)

INVESTIGATORS

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Dr. Kevin Stevenson (CoI)	The Johns Hopkins University Applied Physics Laboratory
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Prof. Nathan J Mayne (CoI) (ESA Member)	University of Exeter
Dr. Maria Zamyatina (CoI) (ESA Member)	University of Exeter
Dr. Jayesh Goyal (CoI)	National Institute of Science Education and Research, India
Dr. Pascal Tremblin (CoI) (ESA Member)	Commissariat a l'Energie Atomique (CEA)
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Ms. Lakeisha M. Ramos Rosado (CoI)	The Johns Hopkins University

VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) HATS-72 BIAS	WFC3/UVIS	4	09-Jan-2025 14:00:17.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
02	(1) HATS-72 BIAS	WFC3/UVIS	4	09-Jan-2025 14:00:19.0	yes
03	(1) HATS-72 BIAS	WFC3/UVIS	4	09-Jan-2025 14:00:20.0	yes
04	(2) NGTS-2 BIAS	WFC3/UVIS	6	09-Jan-2025 14:00:24.0	yes
05	(3) HAT-P-30 BIAS	WFC3/UVIS	3	09-Jan-2025 14:00:27.0	yes
06	(3) HAT-P-30 BIAS	WFC3/UVIS	3	09-Jan-2025 14:00:29.0	yes
56	(3) HAT-P-30 BIAS	WFC3/UVIS	3	09-Jan-2025 14:00:32.0	yes

27 Total Orbits Used

ABSTRACT

During their Grand Tour, the Voyager spacecraft revolutionized our view of the solar system, making more fundamental discoveries about different planetary environments than any mission before or since. Thousands of exoplanets are now known, and with the transformative capabilities of JWST, a Grand Tour of the exoplanets can now begin. How exoplanets form and their overall composition and chemical makeup remain major outstanding issues, and we seek to make progress on the underlying physical processes of these topics by unlocking the rich spectra of exoplanetary atmospheres, synergizing JWST's capabilities with HST. Here, we propose a first-generation JWST-HST exoplanet statistical survey covering giant planets from Neptune to Jupiter sizes. With a wide comprehensive survey across the major giant planet types and temperatures, our Grand Tour will establish a legacy dataset of high-quality exoplanet spectra early in JWST's lifetime. Without this frame of reference, the multitude of single-planet JWST studies will be hard to place in the context of the wider perspective, and rich areas of discovery can be easily overlooked. This program synthesizes the discordant Cycle 1 & 2 observations by carefully selecting 142 hours of complimentary key targets and wavelengths, leveraging the entire set into a 1st generation 350-hour Treasury-level 25 planet survey, a true exoplanet Grand Tour. A statistically significant number of planets will be available in JWST's first few cycles, enabling comparison studies which will provide immediate progress in answering several longstanding key questions relevant to all exoplanet types regarding their atmospheric chemistry and formation.

OBSERVING DESCRIPTION

This program uses HST/WFC3 UVIS slitless spectrograph with the G280 grism to obtain an exoplanet transmission spectra of HATS-72b, NGTS-2b, and HAT-P-30b covering 0.2 to 1.0 microns. Three transits of HATS-72b (requiring four consecutive orbits), one transit of HATS-72b (requiring six consecutive orbits), and two transits of HAT-P-30b (requiring three consecutive orbits) will be done, for a total of 24 orbits. Though HST is operating in reduced gyro mode, for each transit the orbits must be executed consecutively in order to measure both the transit and have sufficient baseline flux out of transit. This is critical in order to accurately characterize telescope systematics and determine the true wavelength-dependent transit depth. Other than this, because UVIS does not use spatial scanning, this impact of RGM will not affect these observations.

Phase constraints have been set in the aquisition image of each visit to observe the transit near the middle of the visits. Orient restrictions have been added such that the spectra of nearby stars (or, in the case of HAT-P-30, a binary companion about 4" away) will not overlap the target spectra.

We have estimated the exposure times using the STScI ETC, and will adopt 175, 118, and 71 second exposures for HATS-72b, NGTS-2b, and HAT-P-30, respectively. We use a post-flash of 12 electrons/pixel, as is recommended by STScI to reduced the impact of charge trapping. As buffer dumps are an important issue with UVIS, we will use sub-arrays to increase duty cycle. Sub-array sizes of 300x1700 limits the overheads between exposures, and contains the entire useable spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array. Using APT, we found 11, 16, and 20 exposures per orbit can be obtained for the three systems, respectively (with the first orbit typically having one fewer exposure due to target acquisition).

Visit

Proposal 17612, HATS-72 Visit 1 (01), completed Thu Jan 09 19:00:33 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: SCHED 100%; ORIENT 15D TO 55 D; ORIENT 70D TO 110 D; ORIENT 148D TO 180 D; ORIENT 195D TO 235 D; ORIENT 250D TO 290 D; ORIENT 328D TO 360 D; Period 7.3279496 D AND ZERO-PHASE HJD2458124.28757

Comments: The optional parameters SIZEAXIS1=1700 and SIZEAXIS2=300 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 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=2136 and CENTERAXIS2=1216, which is intende to put 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. Each exposure in the visit must be observed sequentially with no interruption.

Diagnostics

(Filter Acquisition (01.001)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(Orbit 1 (01.002)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

(Orbit 2 (01.003)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

(Orbit 3 (01.004)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

(Orbit 4 (01.005)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HATS-72	RA: 22 36 6.3190 (339.0263292d) Dec: -16 59 59.79 (-16.99994d) Equinox: J2000	Proper Motion RA: -108.585 mas/yr Proper Motion Dec: -84.43700000952958 mas/yr Parallax: 0.007888" Epoch of Position: 2000	V=12.469	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=STAR
Description=[EXTRA-SOLAR PLANET, EXTRA-SOLAR PLANETARY SYSTEM, K III-I]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Filter Acquisition (WFC3UVIS.im.1923607)	(1) HATS-72	WFC3/UVIS, ACCUM, G280-REF	F300X	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=300	POS TARG null,-50; PHASE 0.9831315504378333 TO 0.9850268818493126	Sequence 1-2 Non-Int in HATS-72 Visit 1 (01)	157 Secs (157 Secs) *[==>]*	***[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=1700 and SIZEAXIS2=300 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.

We use FLASH=12 to meet the nominal count level.

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
2	Orbit 1 (WFC3UVIS.sp.1923769)	(1) HATS-72	WFC3/UVIS, ACCUM, UVIS	G280	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=300	POS TARG null,-50	Sequence 1-2 Non-Int in HATS-72 Visit 1 (01)	175 Secs X 10 (1750 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]*	***[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=1700 and SIZEAXIS2=300 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.

We use FLASH=12 to meet the nominal count level.

Exposure times of 173 seconds have been chosen to optimize between exposure time and number of subexposures. Though the target can be observed longer per exposure without saturating, roughly 10 subexposures per orbit are needed to fully characterize UVIS systematics.

3	Orbit 2 (WFC3UVIS.sp.1923769)	(1) HATS-72	WFC3/UVIS, ACCUM, UVIS	G280	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=300	POS TARG null,-50	Sequence 3-3 Non-Int in HATS-72 Visit 1 (01)	175 Secs X 11 (1925 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]* *[==>(Copy 11)]*	***[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=1700 and SIZEAXIS2=300 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.

We use FLASH=12 to meet the nominal count level.

Exposure times of 173 seconds have been chosen to optimize between exposure time and number of subexposures. Though the target can be observed longer per exposure without saturating, roughly 10 subexposures per orbit are needed to fully characterize UVIS systematics.

4	Orbit 3 (WFC3UVIS.sp.1923769)	(1) HATS-72	WFC3/UVIS, ACCUM, UVIS	G280	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=300	POS TARG null,-50	Sequence 4-4 Non-Int in HATS-72 Visit 1 (01)	175 Secs X 11 (1925 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]* *[==>(Copy 11)]*	***[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.

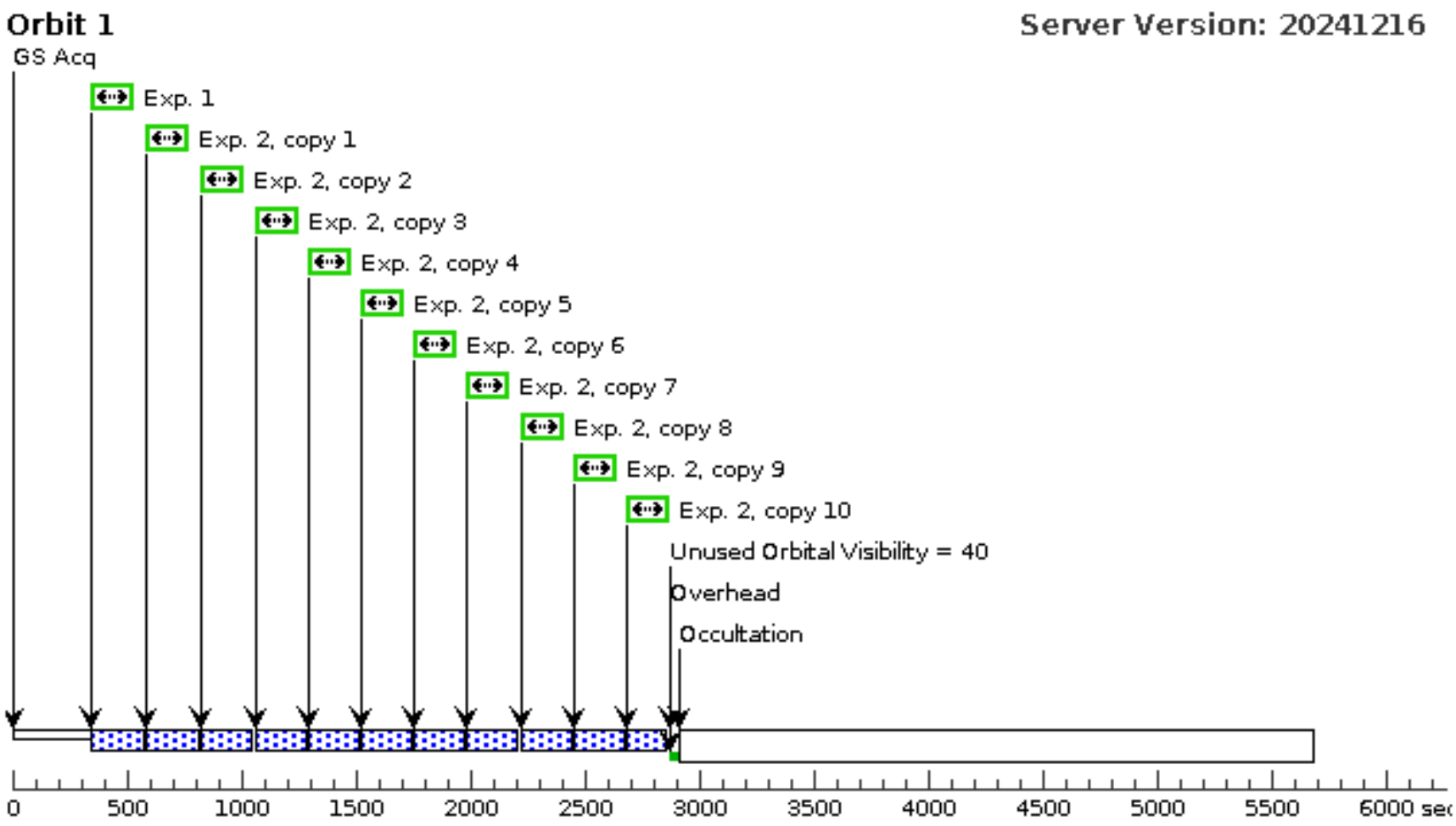
SIZEAXIS1=1700 and SIZEAXIS2=300 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.

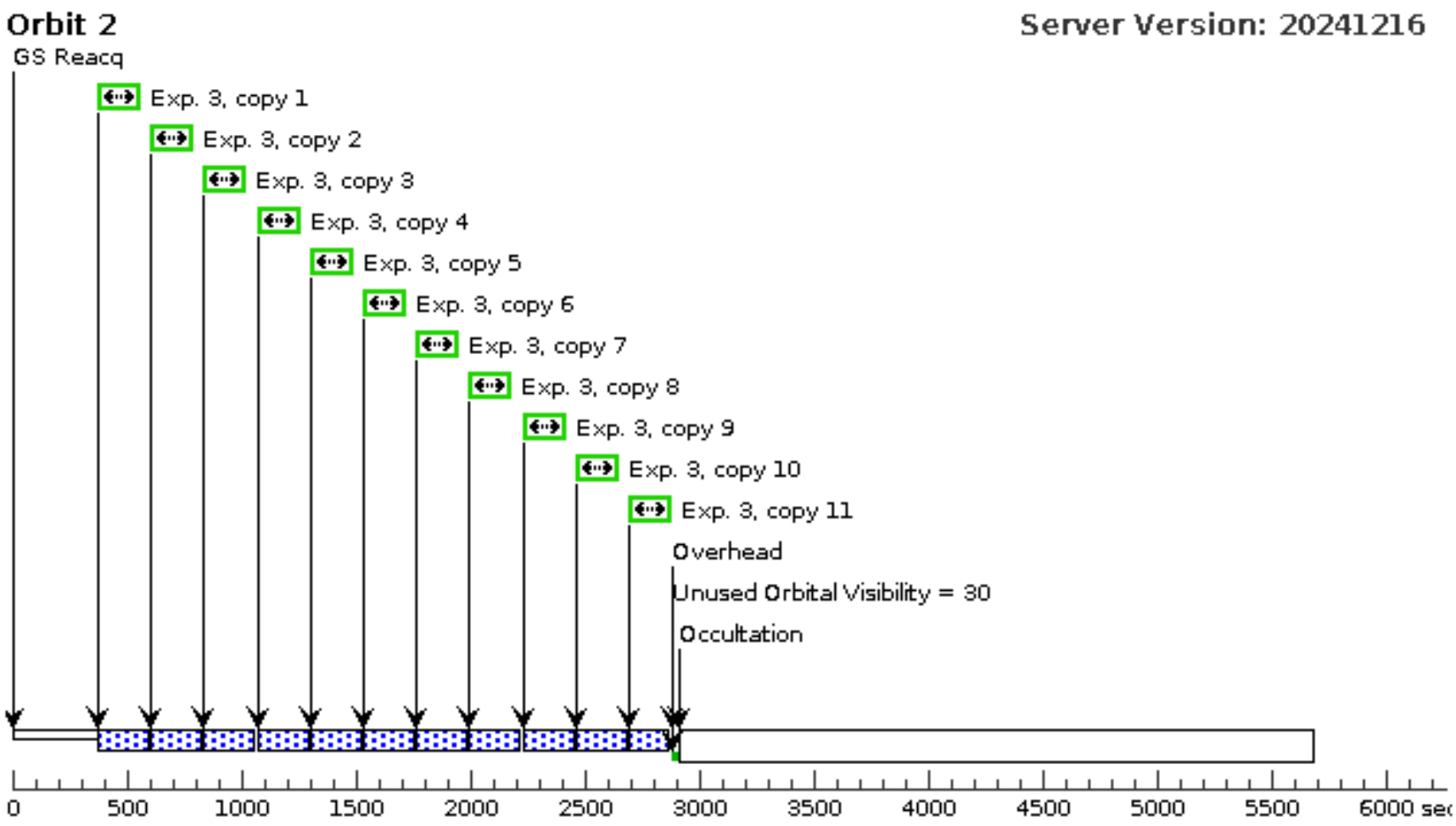
We use FLASH=12 to meet the nominal count level.

Exposure times of 173 seconds have been chosen to optimize between exposure time and number of subexposures. Though the target can be observed longer per exposure without saturating, roughly 10 subexposures per orbit are needed to fully characterize UVIS systematics.

	5	Orbit 4 (WFC3UVIS.sp.1923769)	(1) HATS-72	WFC3/UVIS, ACCUM, UVIS	G280	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=300	POS TARG null,-50	Sequence 5-6 Non-Int in HATS-72 Visit 1 (01)	175 Secs X 11 (1925 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]* *[==>(Copy 11)]*	***[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=1700 and SIZEAXIS2=300 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.* *We use FLASH=12 to meet the nominal count level.* *Exposure times of 173 seconds have been chosen to optimize between exposure time and number of subexposures. Though the target can be observed longer per exposure without saturating, roughly 10 subexposures per orbit are needed to fully characterize UVIS systematics.*							
	6	Bias	BIAS	WFC3/UVIS, ACCUM, UVIS	DEF	CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=300		Sequence 5-6 Non-Int in HATS-72 Visit 1 (01)	0 Secs X 4 (0 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	***[4]***

Orbit Structure

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Server Version: 20241216
GS Reacq
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Exp. 3, copy 2
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
Exp. 3, copy 11
Overhead
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Occultation
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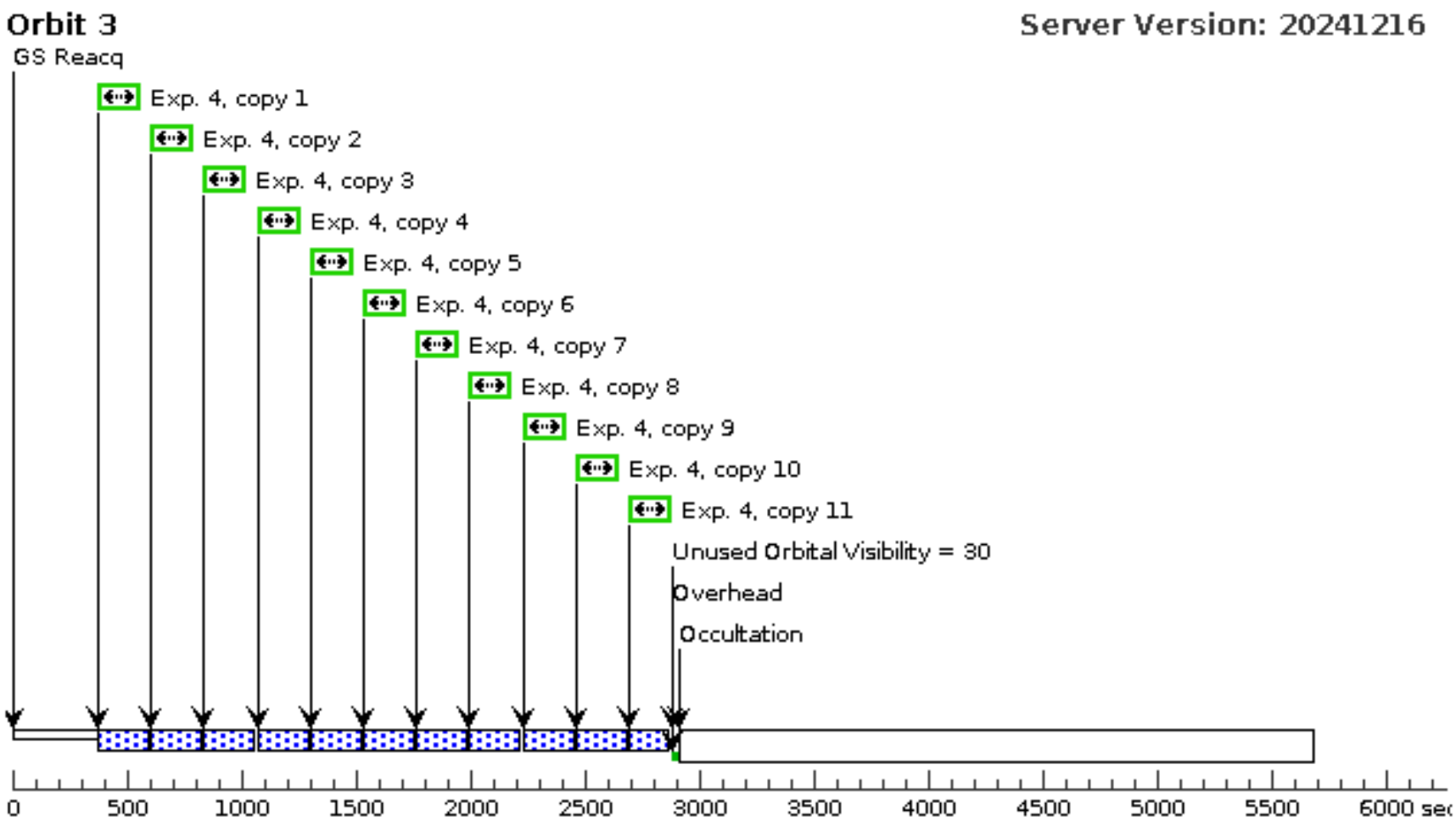
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000 sec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Server Version: 20241216
GS Reacq
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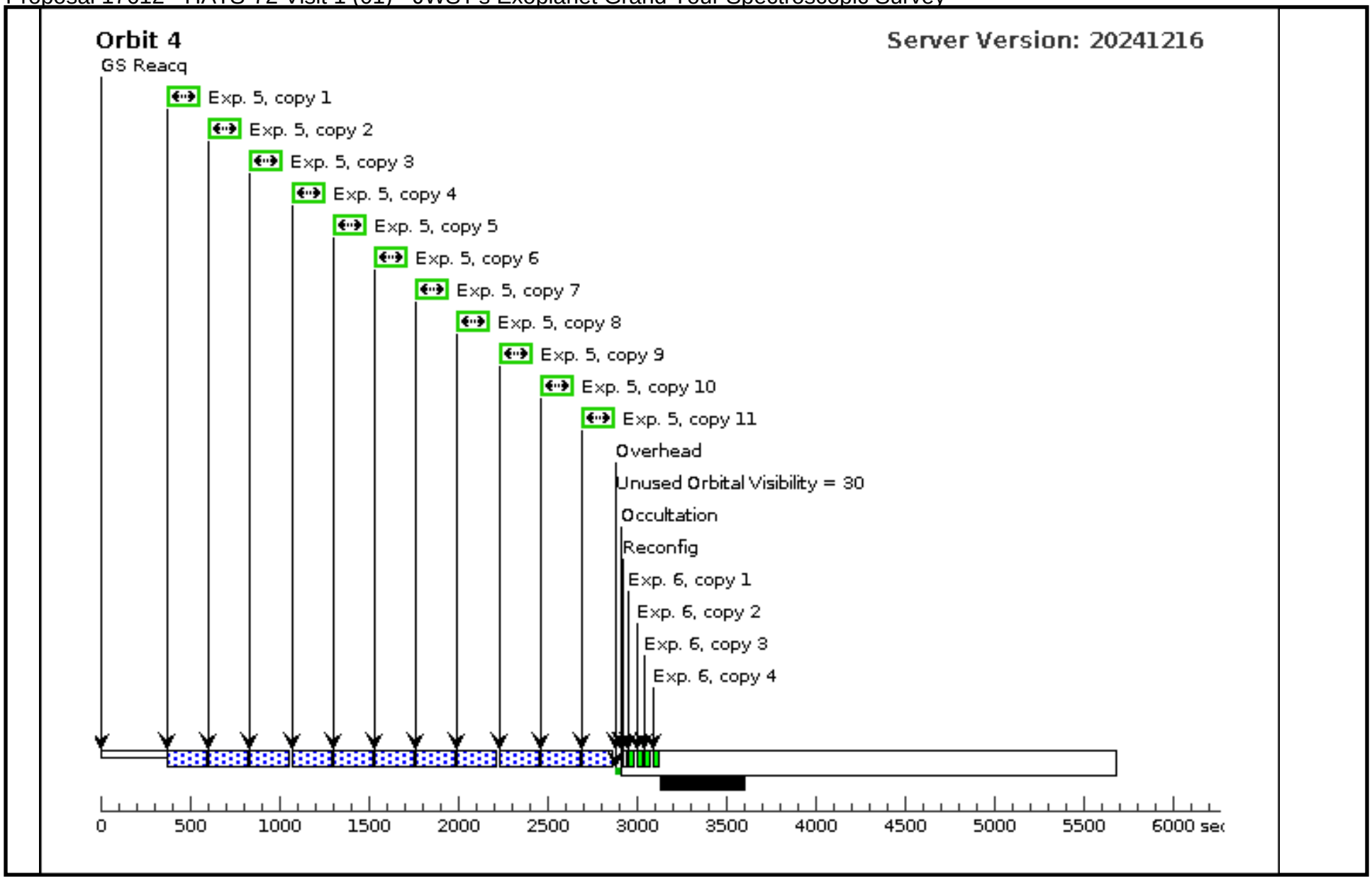
Exp. 4, copy 2
Exp. 4, copy 3
Exp. 4, copy 4
Exp. 4, copy 5
Exp. 4, copy 6
Exp. 4, copy 7
Exp. 4, copy 8
Exp. 4, copy 9
Exp. 4, copy 10
Exp. 4, copy 11
Unused Orbital Visibility = 30
Overhead
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000 sec


Orbit 4
Server Version: 20241216
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
Exp. 5, copy 11
Overhead
Unused Orbital Visibility = 30
Occultation
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 17612, HATS-72 Visit 1 (02), implementation Thu Jan 09 19:00:33 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: SCHED 100%; ORIENT 15D TO 55 D; ORIENT 70D TO 110 D; ORIENT 148D TO 180 D; ORIENT 195D TO 235 D; ORIENT 250D TO 290 D; ORIENT 328D TO 360 D; Period 7.3279496 D AND ZERO-PHASE HJD2458124.28757

Comments: The optional parameters SIZEAXIS1=1700 and SIZEAXIS2=300 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 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=2136 and CENTERAXIS2=1216, which is intende to put 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. Each exposure in the visit must be observed sequentially with no interruption.

Diagnostics

(Filter Acquisition (02.001)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(Orbit 1 (02.002)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

(Orbit 2 (02.003)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

(Orbit 3 (02.004)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

(Orbit 4 (02.005)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HATS-72	RA: 22 36 6.3190 (339.0263292d) Dec: -16 59 59.79 (-16.99994d) Equinox: J2000	Proper Motion RA: -108.585 mas/yr Proper Motion Dec: -84.43700000952958 mas/yr Parallax: 0.007888" Epoch of Position: 2000	V=12.469	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=STAR
Description=[EXTRA-SOLAR PLANET, EXTRA-SOLAR PLANETARY SYSTEM, K III-I]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Filter Acquisition (WFC3UVIS.im.1923607)	(1) HATS-72	WFC3/UVIS, ACCUM, G280-REF	F300X	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=310	POS TARG null,-50; PHASE 0.9831315504378333 TO 0.9850268818493126	Sequence 1-2 Non-Int in HATS-72 Visit 1 (02)	157 Secs (157 Secs) *[==>]*	***[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=1700 and SIZEAXIS2=300 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.

We use FLASH=12 to meet the nominal count level.

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
2	Orbit 1 (WFC3UVIS.sp.1923769)	(1) HATS-72	WFC3/UVIS, ACCUM, UVIS	G280	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=310	POS TARG null,-50	Sequence 1-2 Non-Int in HATS-72 Visit 1 (02)	175 Secs X 10 (1750 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]*	***[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=1700 and SIZEAXIS2=310 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.

We use FLASH=12 to meet the nominal count level.

Exposure times of 173 seconds have been chosen to optimize between exposure time and number of subexposures. Though the target can be observed longer per exposure without saturating, roughly 10 subexposures per orbit are needed to fully characterize UVIS systematics.

3	Orbit 2 (WFC3UVIS.sp.1923769)	(1) HATS-72	WFC3/UVIS, ACCUM, UVIS	G280	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=310	POS TARG null,-50	Sequence 3-3 Non-Int in HATS-72 Visit 1 (02)	175 Secs X 11 (1925 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]* *[==>(Copy 11)]*	***[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=1700 and SIZEAXIS2=310 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.

We use FLASH=12 to meet the nominal count level.

Exposure times of 173 seconds have been chosen to optimize between exposure time and number of subexposures. Though the target can be observed longer per exposure without saturating, roughly 10 subexposures per orbit are needed to fully characterize UVIS systematics.

4	Orbit 3 (WFC3UVIS.sp.1923769)	(1) HATS-72	WFC3/UVIS, ACCUM, UVIS	G280	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=310	POS TARG null,-50	Sequence 4-4 Non-Int in HATS-72 Visit 1 (02)	175 Secs X 11 (1925 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]* *[==>(Copy 11)]*	***[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.

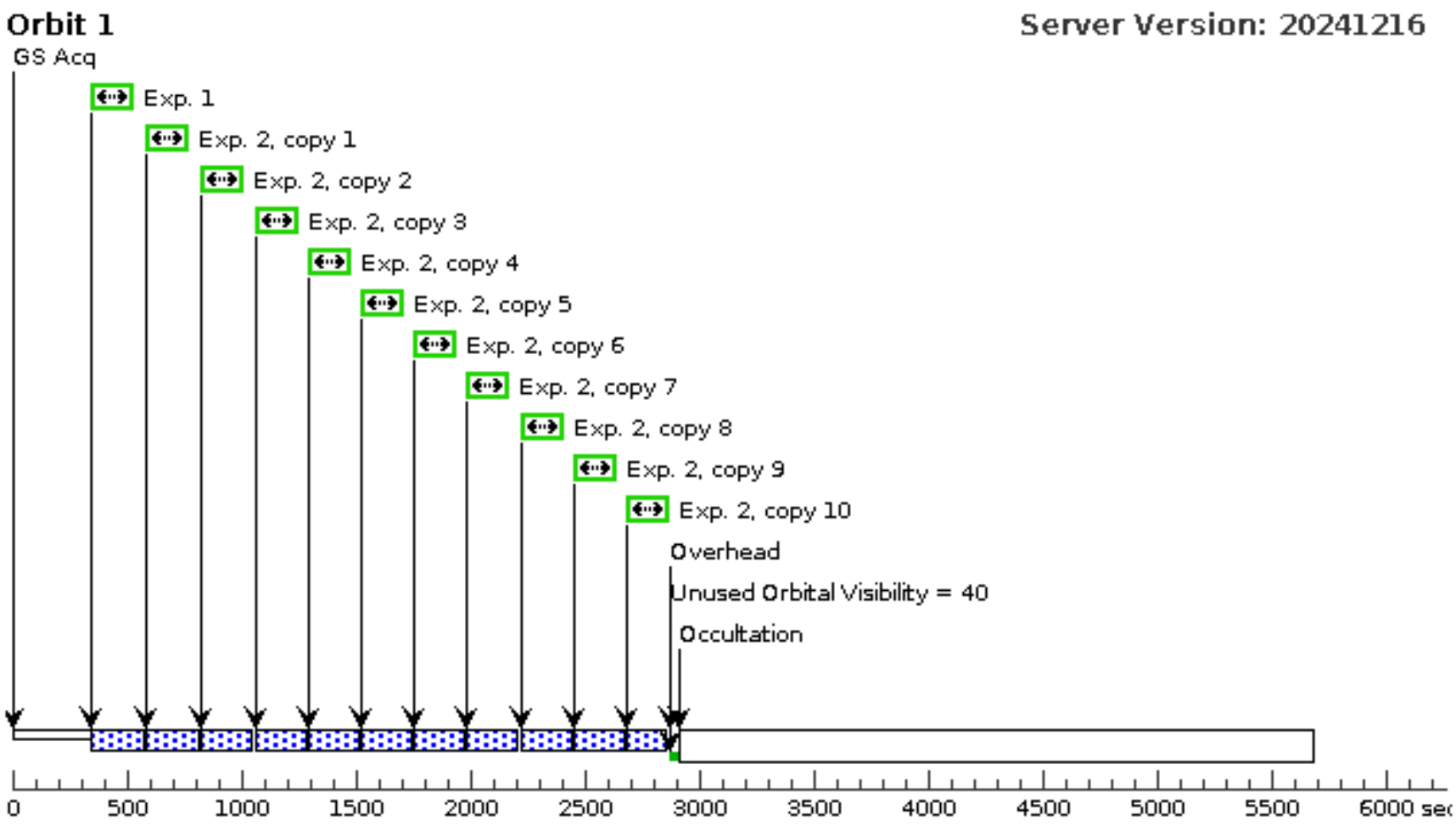
SIZEAXIS1=1700 and SIZEAXIS2=310 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.

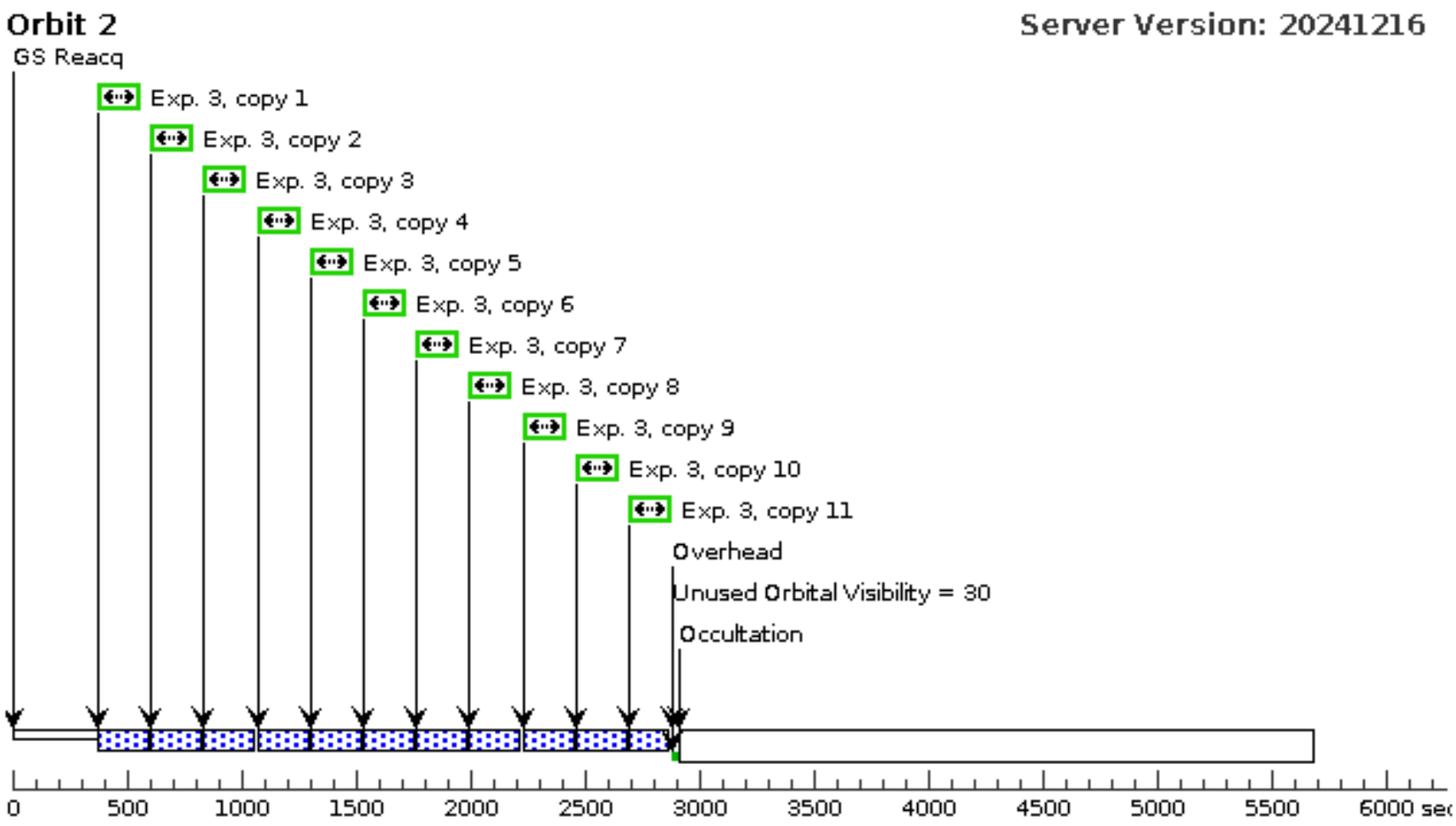
We use FLASH=12 to meet the nominal count level.

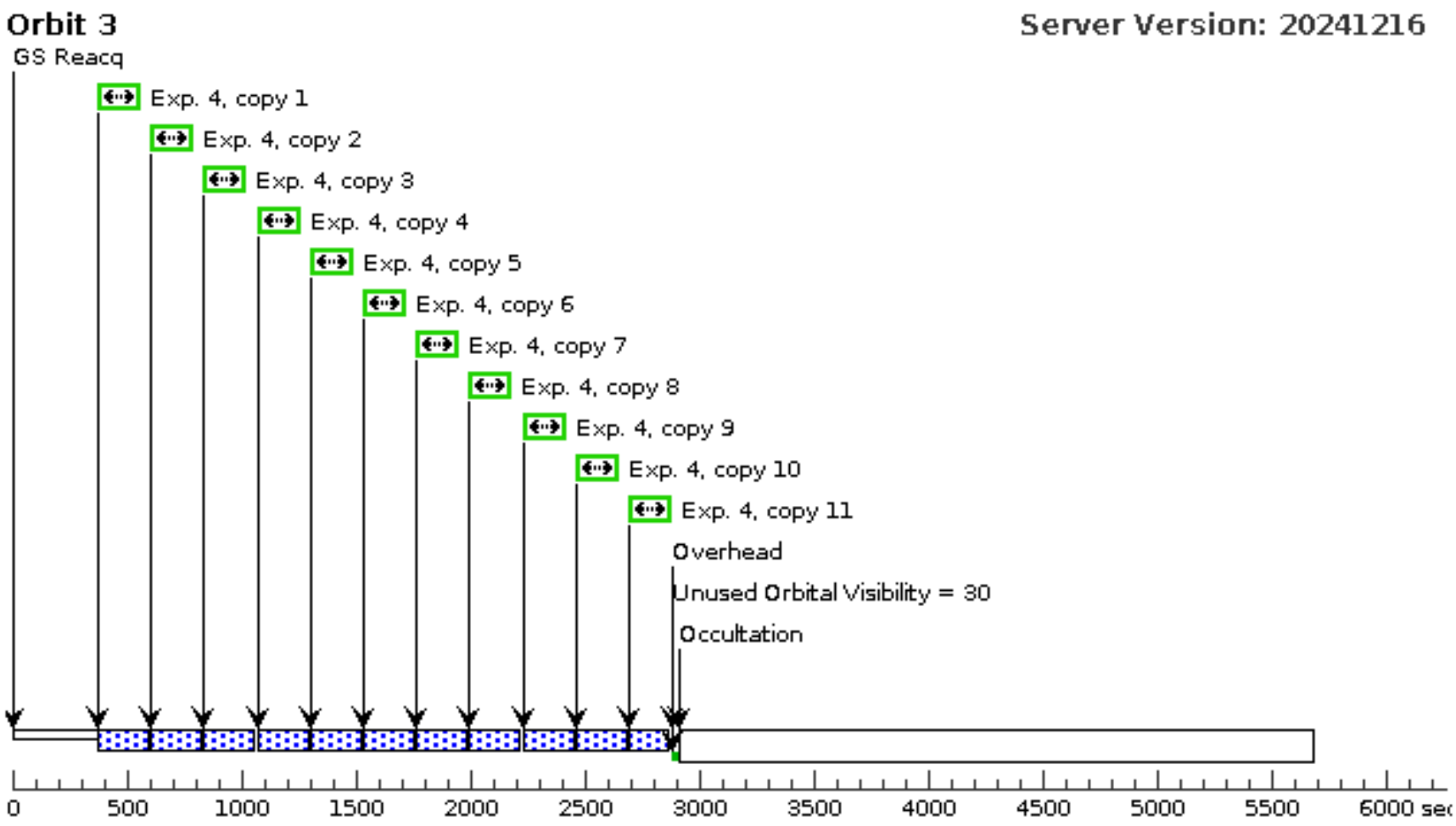
Exposure times of 173 seconds have been chosen to optimize between exposure time and number of subexposures. Though the target can be observed longer per exposure without saturating, roughly 10 subexposures per orbit are needed to fully characterize UVIS systematics.

	5	Orbit 4 (WFC3UVIS.sp.1923769)	(1) HATS-72	WFC3/UVIS, ACCUM, UVIS	G280	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=310	POS TARG null,-50	Sequence 5-6 Non-Int in HATS-72 Visit 1 (02)	175 Secs X 11 (1925 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]* *[==>(Copy 11)]*	***[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=1700 and SIZEAXIS2=310 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.* *We use FLASH=12 to meet the nominal count level.* *Exposure times of 173 seconds have been chosen to optimize between exposure time and number of subexposures. Though the target can be observed longer per exposure without saturating, roughly 10 subexposures per orbit are needed to fully characterize UVIS systematics.*							
	6	Bias	BIAS	WFC3/UVIS, ACCUM, UVIS	DEF	CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=310		Sequence 5-6 Non-Int in HATS-72 Visit 1 (02)	0 Secs X 4 (0 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	***[4]***

Orbit Structure




Orbit 2
Server Version: 20241216
GS Reacq
Exp. 3, copy 1
Exp. 3, copy 2
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
Exp. 3, copy 11
Overhead
Unused Orbital Visibility = 30
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000 sec


Orbit 3
Server Version: 20241216
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
Exp. 4, copy 11
Overhead
Unused Orbital Visibility = 30
Occultation
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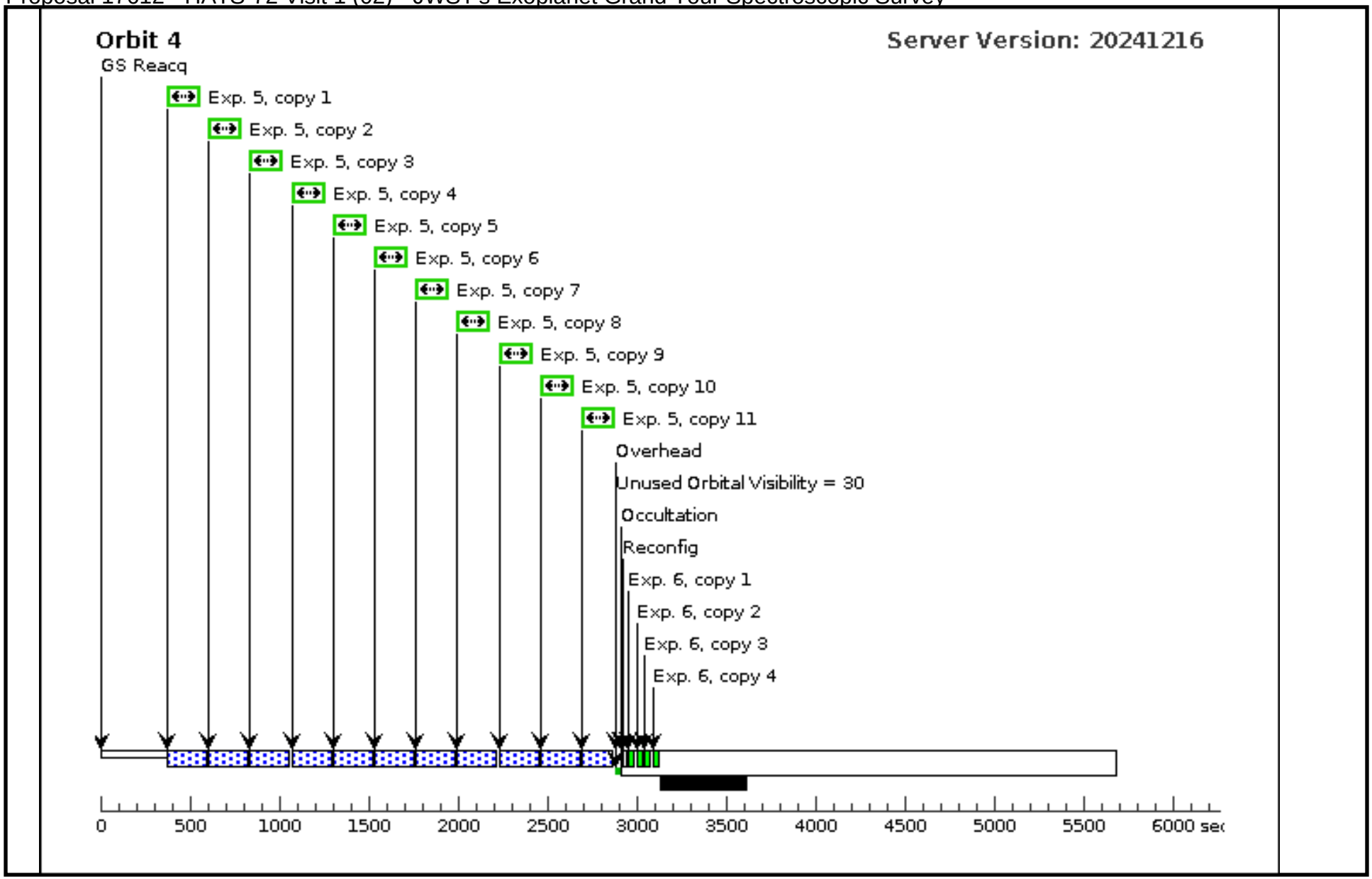
4000
4500
5000
5500
6000 sec


Orbit 4
Server Version: 20241216
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
Exp. 5, copy 11
Overhead
Unused Orbital Visibility = 30
Occultation
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 17612, HATS-72 Visit 1 (03), implementation Thu Jan 09 19:00:33 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: SCHED 100%; ORIENT 15D TO 55 D; ORIENT 70D TO 110 D; ORIENT 148D TO 180 D; ORIENT 195D TO 235 D; ORIENT 250D TO 290 D; ORIENT 328D TO 360 D; Period 7.3279496 D AND ZERO-PHASE HJD2458124.28757

Comments: The optional parameters SIZEAXIS1=1700 and SIZEAXIS2=300 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 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=2136 and CENTERAXIS2=1216, which is intende to put 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. Each exposure in the visit must be observed sequentially with no interruption.

Diagnostics

(Filter Acquisition (03.001)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(Orbit 1 (03.002)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

(Orbit 2 (03.003)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

(Orbit 3 (03.004)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

(Orbit 4 (03.005)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HATS-72	RA: 22 36 6.3190 (339.0263292d) Dec: -16 59 59.79 (-16.99994d) Equinox: J2000	Proper Motion RA: -108.585 mas/yr Proper Motion Dec: -84.43700000952958 mas/yr Parallax: 0.007888" Epoch of Position: 2000	V=12.469	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=STAR
Description=[EXTRA-SOLAR PLANET, EXTRA-SOLAR PLANETARY SYSTEM, K III-I]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Filter Acquisition (WFC3UVIS.im.1923607)	(1) HATS-72	WFC3/UVIS, ACCUM, G280-REF	F300X	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=310	POS TARG null,-50; PHASE 0.9831315504378333 TO 0.9850268818493126	Sequence 1-2 Non-Int in HATS-72 Visit 1 (03)	157 Secs (157 Secs) *[==>]*	***[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=1700 and SIZEAXIS2=300 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.

We use FLASH=12 to meet the nominal count level.

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
2	Orbit 1 (WFC3UVIS.sp.1923769)	(1) HATS-72	WFC3/UVIS, ACCUM, UVIS	G280	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=310	POS TARG null,-50	Sequence 1-2 Non-Int in HATS-72 Visit 1 (03)	175 Secs X 10 (1750 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]*	***[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=1700 and SIZEAXIS2=310 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.

We use FLASH=12 to meet the nominal count level.

Exposure times of 173 seconds have been chosen to optimize between exposure time and number of subexposures. Though the target can be observed longer per exposure without saturating, roughly 10 subexposures per orbit are needed to fully characterize UVIS systematics.

3	Orbit 2 (WFC3UVIS.sp.1923769)	(1) HATS-72	WFC3/UVIS, ACCUM, UVIS	G280	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=310	POS TARG null,-50	Sequence 3-3 Non-Int in HATS-72 Visit 1 (03)	175 Secs X 11 (1925 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]* *[==>(Copy 11)]*	***[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=1700 and SIZEAXIS2=310 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.

We use FLASH=12 to meet the nominal count level.

Exposure times of 173 seconds have been chosen to optimize between exposure time and number of subexposures. Though the target can be observed longer per exposure without saturating, roughly 10 subexposures per orbit are needed to fully characterize UVIS systematics.

4	Orbit 3 (WFC3UVIS.sp.1923769)	(1) HATS-72	WFC3/UVIS, ACCUM, UVIS	G280	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=310	POS TARG null,-50	Sequence 4-4 Non-Int in HATS-72 Visit 1 (03)	175 Secs X 11 (1925 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]* *[==>(Copy 11)]*	***[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.

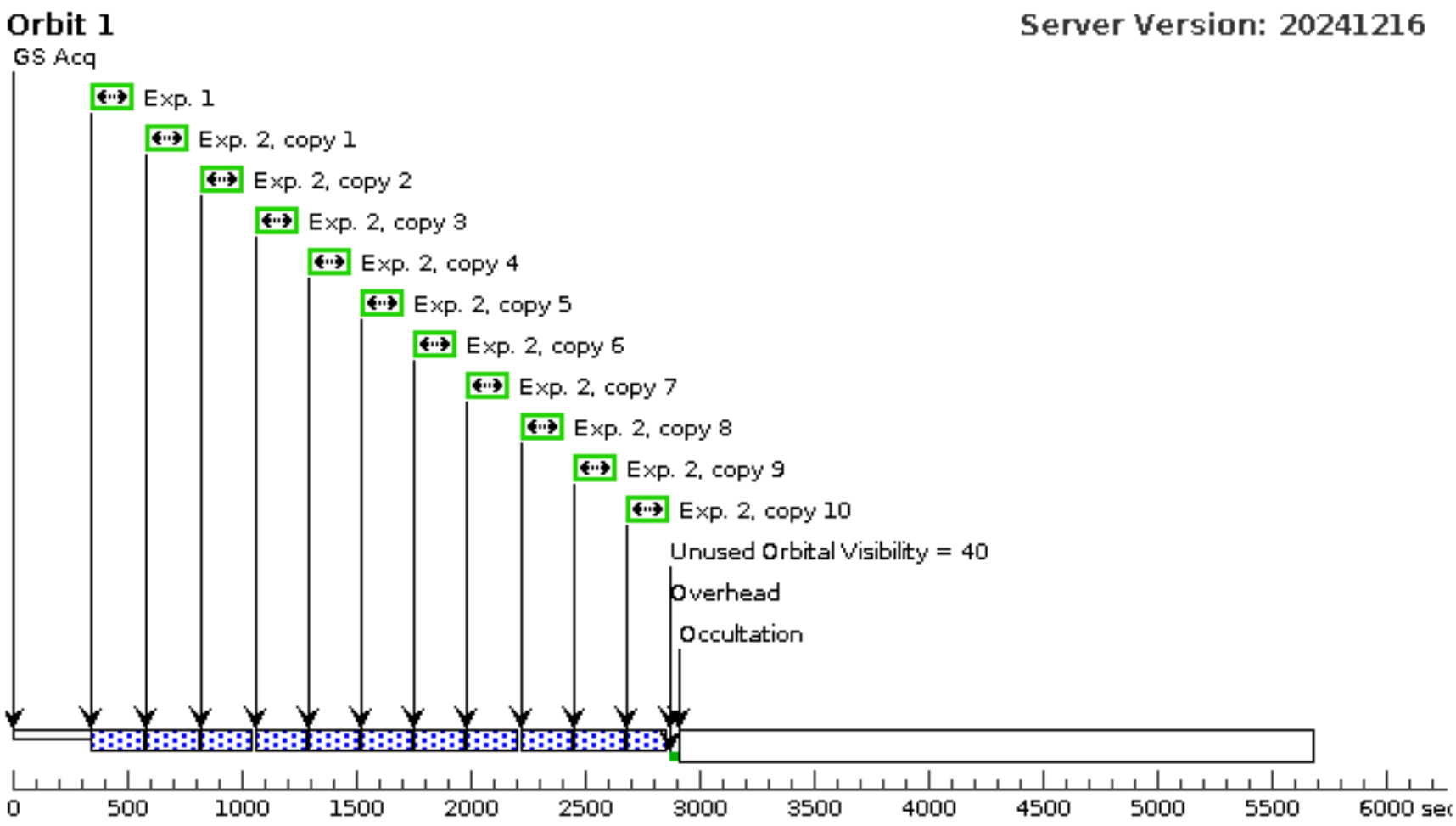
SIZEAXIS1=1700 and SIZEAXIS2=310 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.

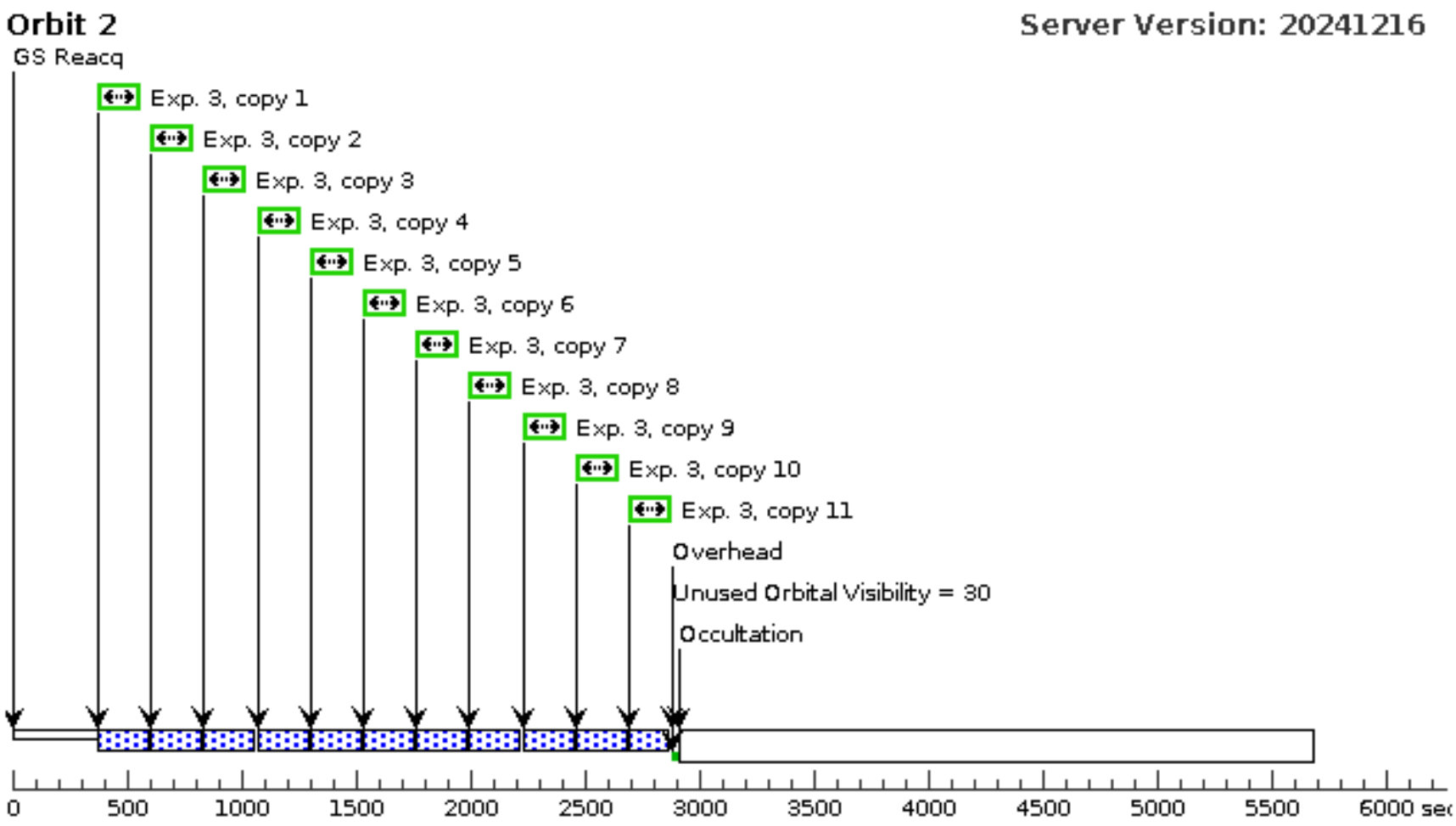
We use FLASH=12 to meet the nominal count level.

Exposure times of 173 seconds have been chosen to optimize between exposure time and number of subexposures. Though the target can be observed longer per exposure without saturating, roughly 10 subexposures per orbit are needed to fully characterize UVIS systematics.

	5	Orbit 4 (WFC3UVIS.sp.1923769)	(1) HATS-72	WFC3/UVIS, ACCUM, UVIS	G280	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=310	POS TARG null,-50	Sequence 5-6 Non-Int in HATS-72 Visit 1 (03)	175 Secs X 11 (1925 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]* *[==>(Copy 11)]*	***[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=1700 and SIZEAXIS2=310 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.* *We use FLASH=12 to meet the nominal count level.* *Exposure times of 173 seconds have been chosen to optimize between exposure time and number of subexposures. Though the target can be observed longer per exposure without saturating, roughly 10 subexposures per orbit are needed to fully characterize UVIS systematics.*							
	6	Bias	BIAS	WFC3/UVIS, ACCUM, UVIS	DEF	CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=310		Sequence 5-6 Non-Int in HATS-72 Visit 1 (03)	0 Secs X 4 (0 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	***[4]***

Orbit Structure




Orbit 2
Server Version: 20241216
GS Reacq
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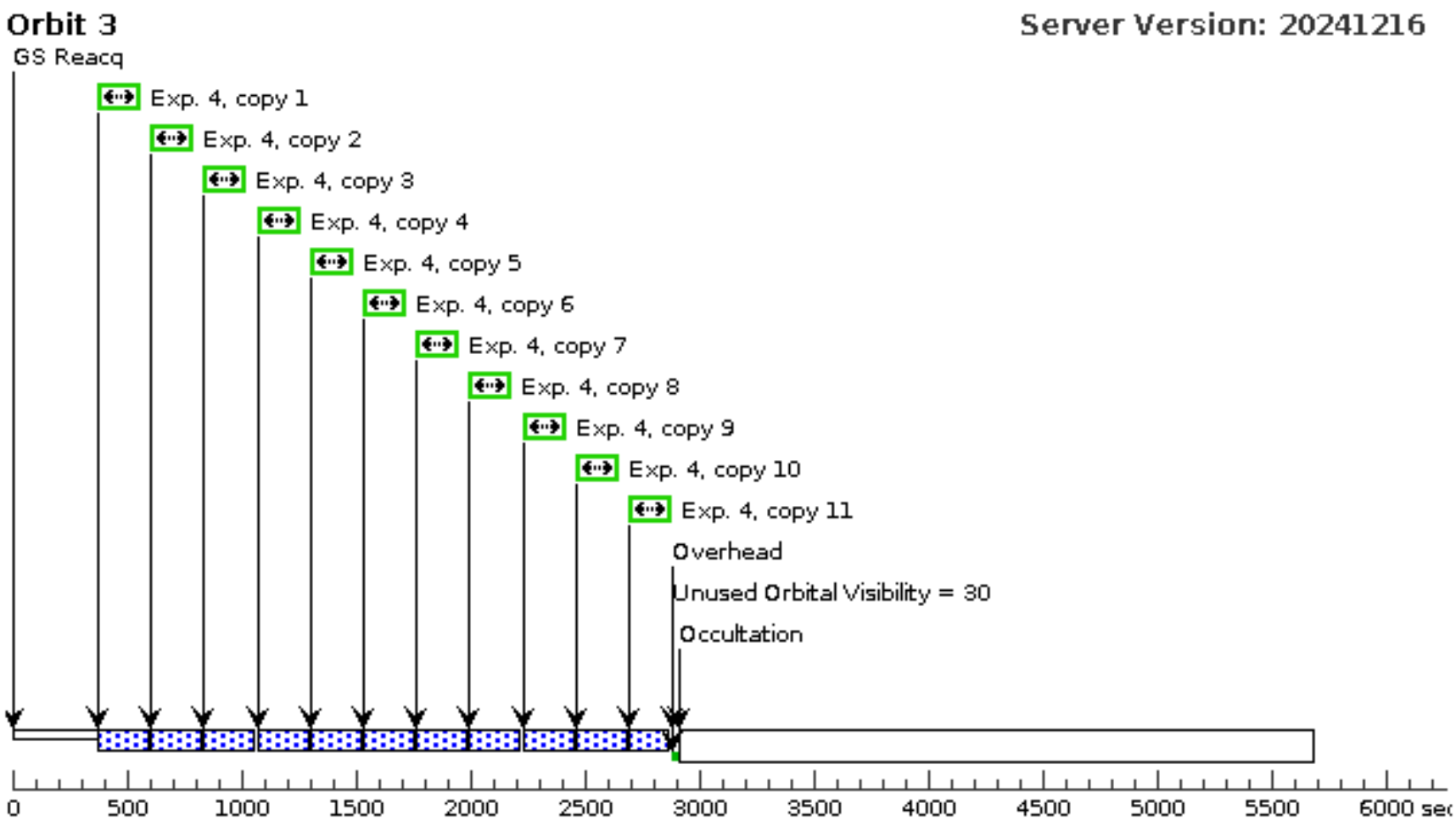
Exp. 3, copy 2
Exp. 3, copy 3
Exp. 3, copy 4
Exp. 3, copy 5
Exp. 3, copy 6
Exp. 3, copy 7
Exp. 3, copy 8
Exp. 3, copy 9
Exp. 3, copy 10
Exp. 3, copy 11
Overhead
Unused Orbital Visibility = 30
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000 sec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Server Version: 20241216
GS Reacq
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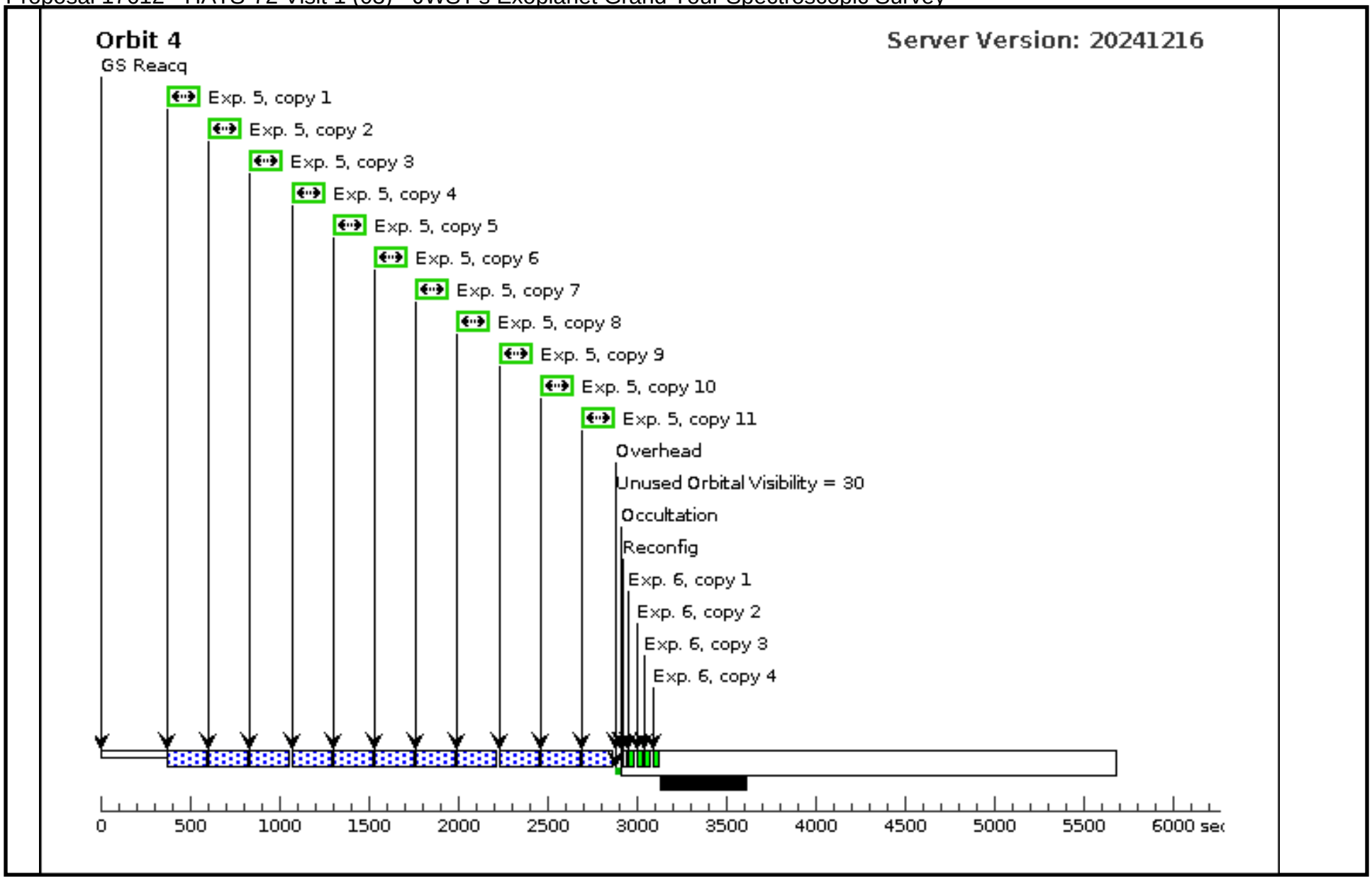
Exp. 4, copy 4
Exp. 4, copy 5
Exp. 4, copy 6
Exp. 4, copy 7
Exp. 4, copy 8
Exp. 4, copy 9
Exp. 4, copy 10
Exp. 4, copy 11
Overhead
Unused Orbital Visibility = 30
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000 sec


Orbit 4
Server Version: 20241216
GS Reacq
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Exp. 5, copy 2
Exp. 5, copy 3
Exp. 5, copy 4
Exp. 5, copy 5
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Exp. 5, copy 8
Exp. 5, copy 9
Exp. 5, copy 10
Exp. 5, copy 11
Overhead
Unused Orbital Visibility = 30
Occultation
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 17612, NGTS-2 Visit 1 (04), implementation Thu Jan 09 19:00:33 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 0D TO 13 D; ORIENT 30D TO 70 D; ORIENT 112D TO 124 D; ORIENT 145D TO 155 D; ORIENT 174D TO 193 D; ORIENT 210D TO 250 D; ORIENT 292D TO 304 D; ORIENT 325D TO 335 D; ORIENT 354D TO 359 D; Period 4.5111234 D AND ZERO-PHASE HJD2459351.553003

Comments: The optional parameters SIZEAXIS1=1700 and SIZEAXIS2=300 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 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=2136 and CENTERAXIS2=1216, which is intended to put 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. Each exposure in the visit must be observed sequentially with no interruption.

Diagnostics

(Filter Acquisition (04.001)) 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
(2)	NGTS-2	RA: 14 20 29.4891 (215.1228713d) Dec: -31 12 7.44 (-31.20207d) Equinox: J2000	Proper Motion RA: -21.786 mas/yr Proper Motion Dec: -0.9060000365934684 mas/yr Parallax: 0.0027764" Epoch of Position: 2000	V=10.961	Reference Frame: SIMBAD

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=STAR
Description=[EXTRA-SOLAR PLANET, 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	Filter Acquisition (WFC3UVIS.im.1923695)	(2) NGTS-2	WFC3/UVIS, ACCUM, G280-REF	F300X	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=310	POS TARG null,-50; PHASE 0.9578206915603649 TO 0.9608994731982945	Sequence 1-2 Non-Int in NGTS-2 Visit 1 (04)	6 Secs (4 Secs) *[==>4.0 Secs]*	***[1]***
2	Orbit 1 (WFC3UVIS.sp.1923763)	(2) NGTS-2	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=310; FLASH=12	POS TARG null,-50	Sequence 1-2 Non-Int in NGTS-2 Visit 1 (04)	118 Secs X 15 (1740 Secs) *[==>116.0 Secs (Copy 1)]* *[==>116.0 Secs (Copy 2)]* *[==>116.0 Secs (Copy 3)]* *[==>116.0 Secs (Copy 4)]* *[==>116.0 Secs (Copy 5)]* *[==>116.0 Secs (Copy 6)]* *[==>116.0 Secs (Copy 7)]* *[==>116.0 Secs (Copy 8)]* *[==>116.0 Secs (Copy 9)]* *[==>116.0 Secs (Copy 10)]* *[==>116.0 Secs (Copy 11)]* *[==>116.0 Secs (Copy 12)]* *[==>116.0 Secs (Copy 13)]* *[==>116.0 Secs (Copy 14)]* *[==>116.0 Secs (Copy 15)]*	***[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=1700 and SIZEAXIS2=300 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.

We use FLASH=12 to meet the nominal count level.

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=1700 and SIZEAXIS2=310 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.

We use FLASH=12 to meet the nominal count level.

Exposure times have been chosen to achieve 2/3 well-depth and limit the amount of unused time per orbit.

3	Orbit 2 (WFC3UVIS.sp.1923763)	(2) NGTS-2	WFC3/UVIS, ACCUM, UVIS	G280	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=310	POS TARG null,-50	Sequence 3-3 Non-Int in NGTS-2 Visit 1 (04)	118 Secs X 16 (1776 Secs) *[==>111.0 Secs (Copy 1)]* *[==>111.0 Secs (Copy 2)]* *[==>111.0 Secs (Copy 3)]* *[==>111.0 Secs (Copy 4)]* *[==>111.0 Secs (Copy 5)]* *[==>111.0 Secs (Copy 6)]* *[==>111.0 Secs (Copy 7)]* *[==>111.0 Secs (Copy 8)]* *[==>111.0 Secs (Copy 9)]* *[==>111.0 Secs (Copy 10)]* *[==>111.0 Secs (Copy 11)]* *[==>111.0 Secs (Copy 12)]* *[==>111.0 Secs (Copy 13)]* *[==>111.0 Secs (Copy 14)]* *[==>111.0 Secs (Copy 15)]* *[==>111.0 Secs (Copy 16)]*	***[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=1700 and SIZEAXIS2=310 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.

We use FLASH=12 to meet the nominal count level.

Exposure times have been chosen to achieve 2/3 well-depth and limit the amount of unused time per orbit.

4	Orbit 3 (WFC3UVIS.sp.1923763)	(2) NGTS-2	WFC3/UVIS, ACCUM, UVIS	G280	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=310	POS TARG null,-50	Sequence 4-4 Non-Int in NGTS-2 Visit 1 (04)	118 Secs X 16 (1776 Secs) *[==>111.0 Secs (Copy 1)]* *[==>111.0 Secs (Copy 2)]* *[==>111.0 Secs (Copy 3)]* *[==>111.0 Secs (Copy 4)]* *[==>111.0 Secs (Copy 5)]* *[==>111.0 Secs (Copy 6)]* *[==>111.0 Secs (Copy 7)]* *[==>111.0 Secs (Copy 8)]* *[==>111.0 Secs (Copy 9)]* *[==>111.0 Secs (Copy 10)]* *[==>111.0 Secs (Copy 11)]* *[==>111.0 Secs (Copy 12)]* *[==>111.0 Secs (Copy 13)]* *[==>111.0 Secs (Copy 14)]* *[==>111.0 Secs (Copy 15)]* *[==>111.0 Secs (Copy 16)]*	***[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=1700 and SIZEAXIS2=310 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.

We use FLASH=12 to meet the nominal count level.

Exposure times have been chosen to achieve 2/3 well-depth and limit the amount of unused time per orbit.

5	Orbit 4 (WFC3UVIS.sp.1923763)	(2) NGTS-2	WFC3/UVIS, ACCUM, UVIS	G280	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=310	POS TARG null,-50	Sequence 5-5 Non-Int in NGTS-2 Visit 1 (04)	118 Secs X 16 (1776 Secs) *[==>111.0 Secs (Copy 1)]* *[==>111.0 Secs (Copy 2)]* *[==>111.0 Secs (Copy 3)]* *[==>111.0 Secs (Copy 4)]* *[==>111.0 Secs (Copy 5)]* *[==>111.0 Secs (Copy 6)]* *[==>111.0 Secs (Copy 7)]* *[==>111.0 Secs (Copy 8)]* *[==>111.0 Secs (Copy 9)]* *[==>111.0 Secs (Copy 10)]* *[==>111.0 Secs (Copy 11)]* *[==>111.0 Secs (Copy 12)]* *[==>111.0 Secs (Copy 13)]* *[==>111.0 Secs (Copy 14)]* *[==>111.0 Secs (Copy 15)]* *[==>111.0 Secs (Copy 16)]*	***[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=1700 and SIZEAXIS2=310 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.

We use FLASH=12 to meet the nominal count level.

Exposure times have been chosen to achieve 2/3 well-depth and limit the amount of unused time per orbit.

6	Orbit 5 (WFC3UVIS.sp.1923763)	(2) NGTS-2	WFC3/UVIS, ACCUM, UVIS	G280	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=310	POS TARG null,-50	Sequence 6-6 Non-Int in NGTS-2 Visit 1 (04)	118 Secs X 16 (1776 Secs) *[==>111.0 Secs (Copy 1)]* *[==>111.0 Secs (Copy 2)]* *[==>111.0 Secs (Copy 3)]* *[==>111.0 Secs (Copy 4)]* *[==>111.0 Secs (Copy 5)]* *[==>111.0 Secs (Copy 6)]* *[==>111.0 Secs (Copy 7)]* *[==>111.0 Secs (Copy 8)]* *[==>111.0 Secs (Copy 9)]* *[==>111.0 Secs (Copy 10)]* *[==>111.0 Secs (Copy 11)]* *[==>111.0 Secs (Copy 12)]* *[==>111.0 Secs (Copy 13)]* *[==>111.0 Secs (Copy 14)]* *[==>111.0 Secs (Copy 15)]* *[==>111.0 Secs (Copy 16)]*	***[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.

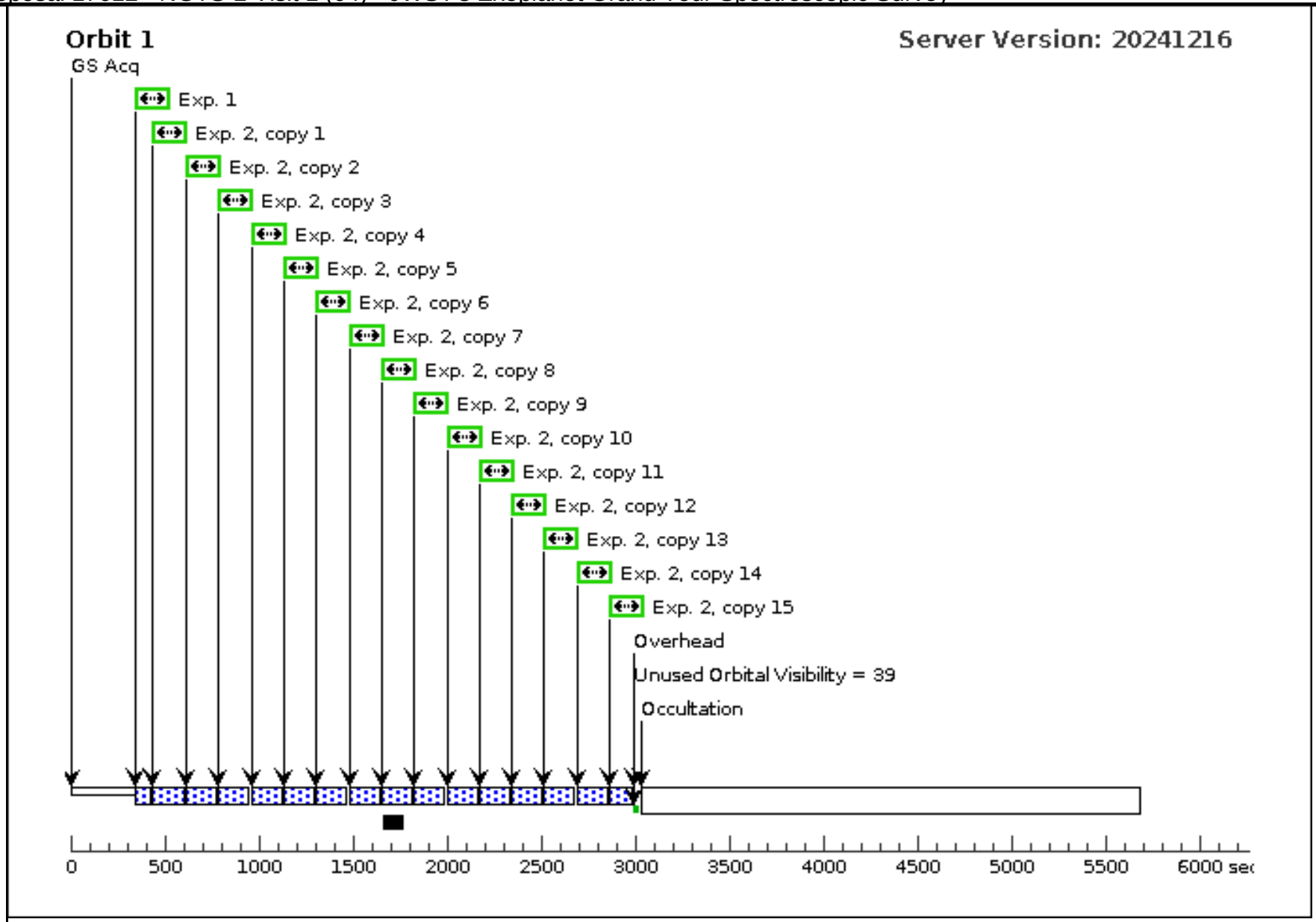
SIZEAXIS1=1700 and SIZEAXIS2=310 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.

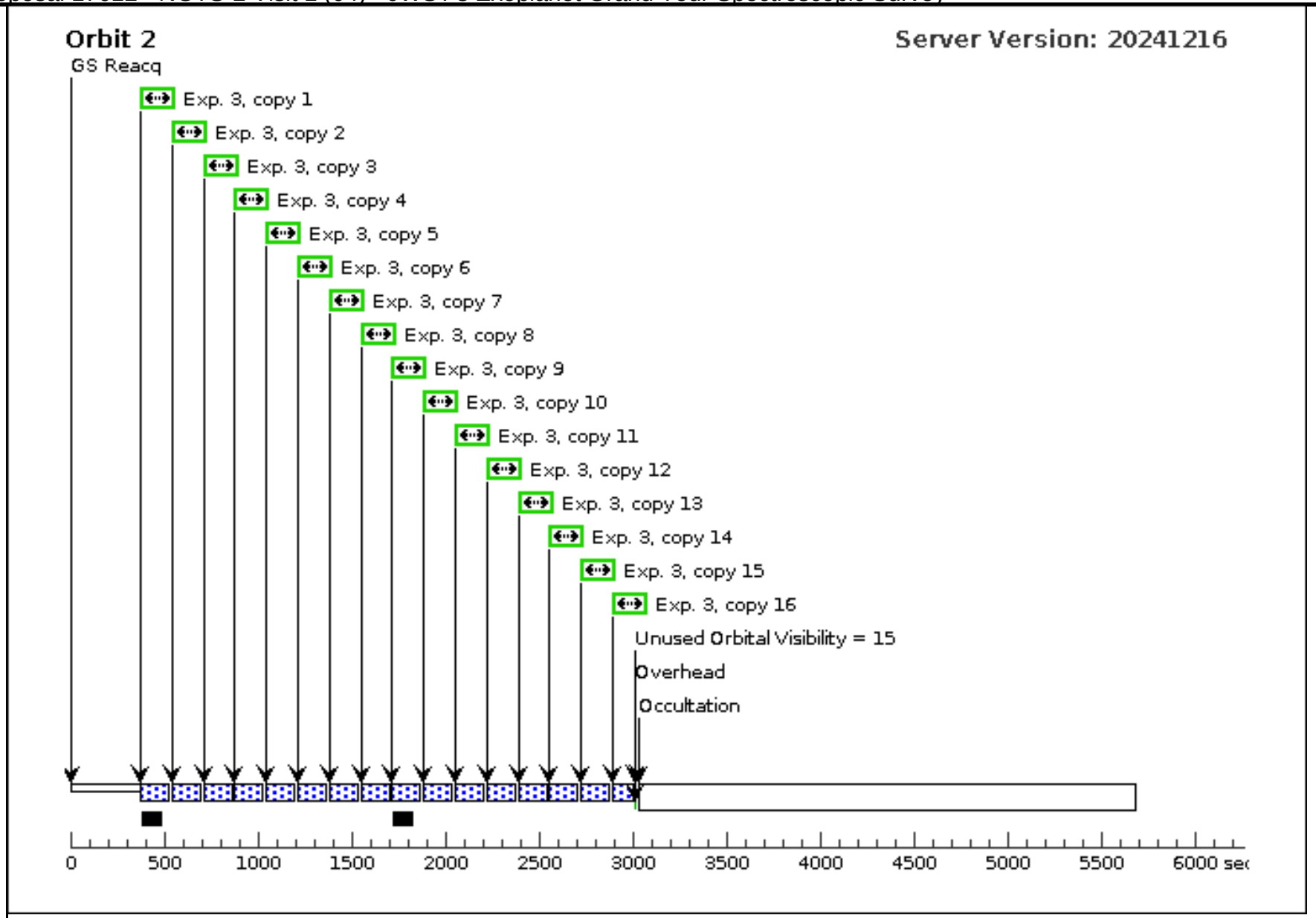
We use FLASH=12 to meet the nominal count level.

Exposure times have been chosen to achieve 2/3 well-depth and limit the amount of unused time per orbit.

	7	Orbit 6 (WFC3UVIS.sp.1923763)	(2) NGTS-2	WFC3/UVIS, ACCUM, UVIS	G280	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=310	POS TARG null,-50	Sequence 7-8 Non-Int in NGTS-2 Visit 1 (04)	118 Secs X 16 (1776 Secs) *[==>111.0 Secs (Copy 1)]* *[==>111.0 Secs (Copy 2)]* *[==>111.0 Secs (Copy 3)]* *[==>111.0 Secs (Copy 4)]* *[==>111.0 Secs (Copy 5)]* *[==>111.0 Secs (Copy 6)]* *[==>111.0 Secs (Copy 7)]* *[==>111.0 Secs (Copy 8)]* *[==>111.0 Secs (Copy 9)]* *[==>111.0 Secs (Copy 10)]* *[==>111.0 Secs (Copy 11)]* *[==>111.0 Secs (Copy 12)]* *[==>111.0 Secs (Copy 13)]* *[==>111.0 Secs (Copy 14)]* *[==>111.0 Secs (Copy 15)]* *[==>111.0 Secs (Copy 16)]*	***[6]***
	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=1700 and SIZEAXIS2=310 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.* *We use FLASH=12 to meet the nominal count level.* *Exposure times have been chosen to achieve 2/3 well-depth and limit the amount of unused time per orbit.*									
	8	Bias	BIAS	WFC3/UVIS, ACCUM, UVIS	DEF	CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=310		Sequence 7-8 Non-Int in NGTS-2 Visit 1 (04)	0 Secs X 4 (0 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	***[6]***

Orbit Structure

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Exp. 3, copy 11
Exp. 3, copy 12
Exp. 3, copy 13
Exp. 3, copy 14
Exp. 3, copy 15
Exp. 3, copy 16
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Overhead
Occultation
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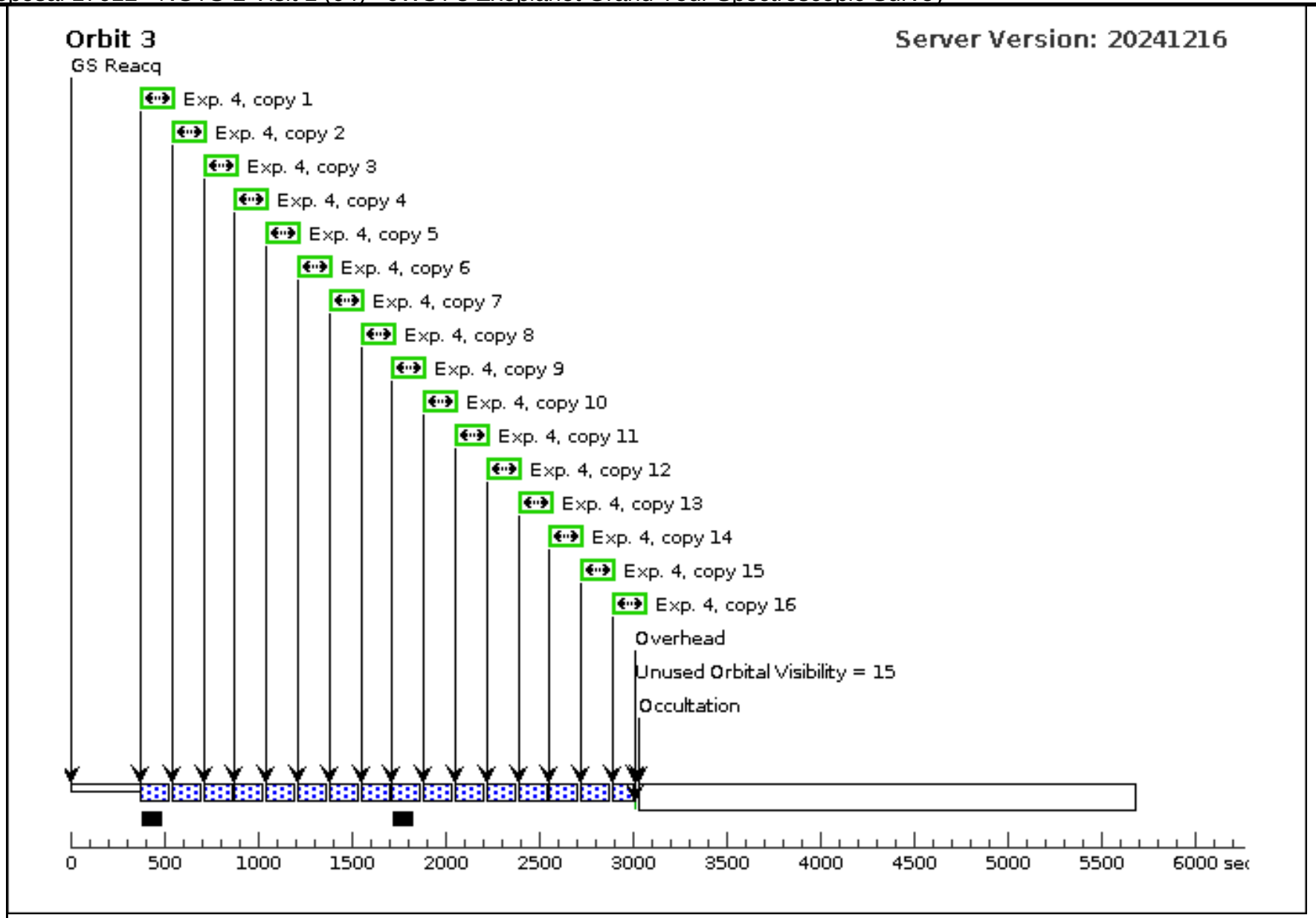
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000 sec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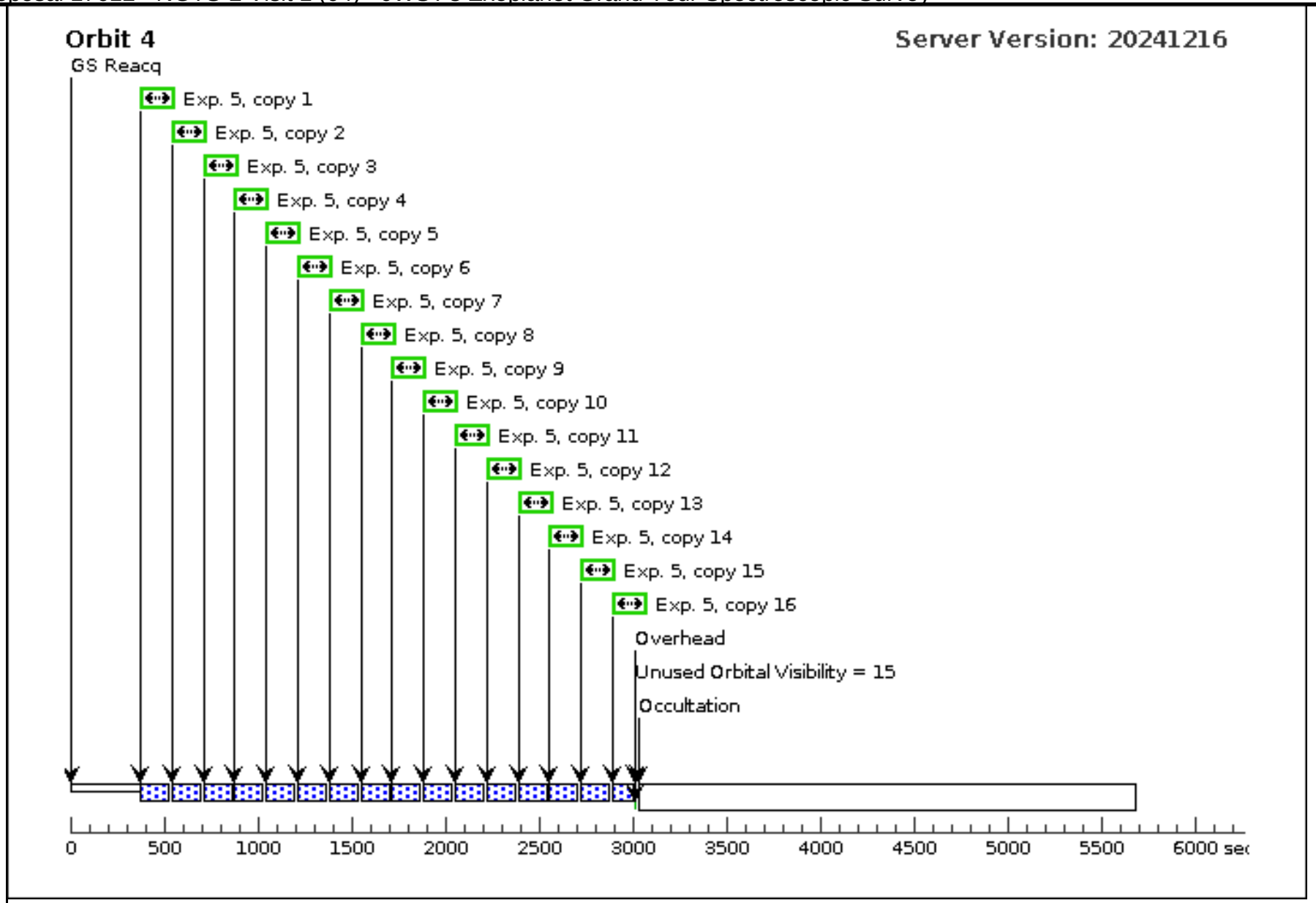
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GS Reacq
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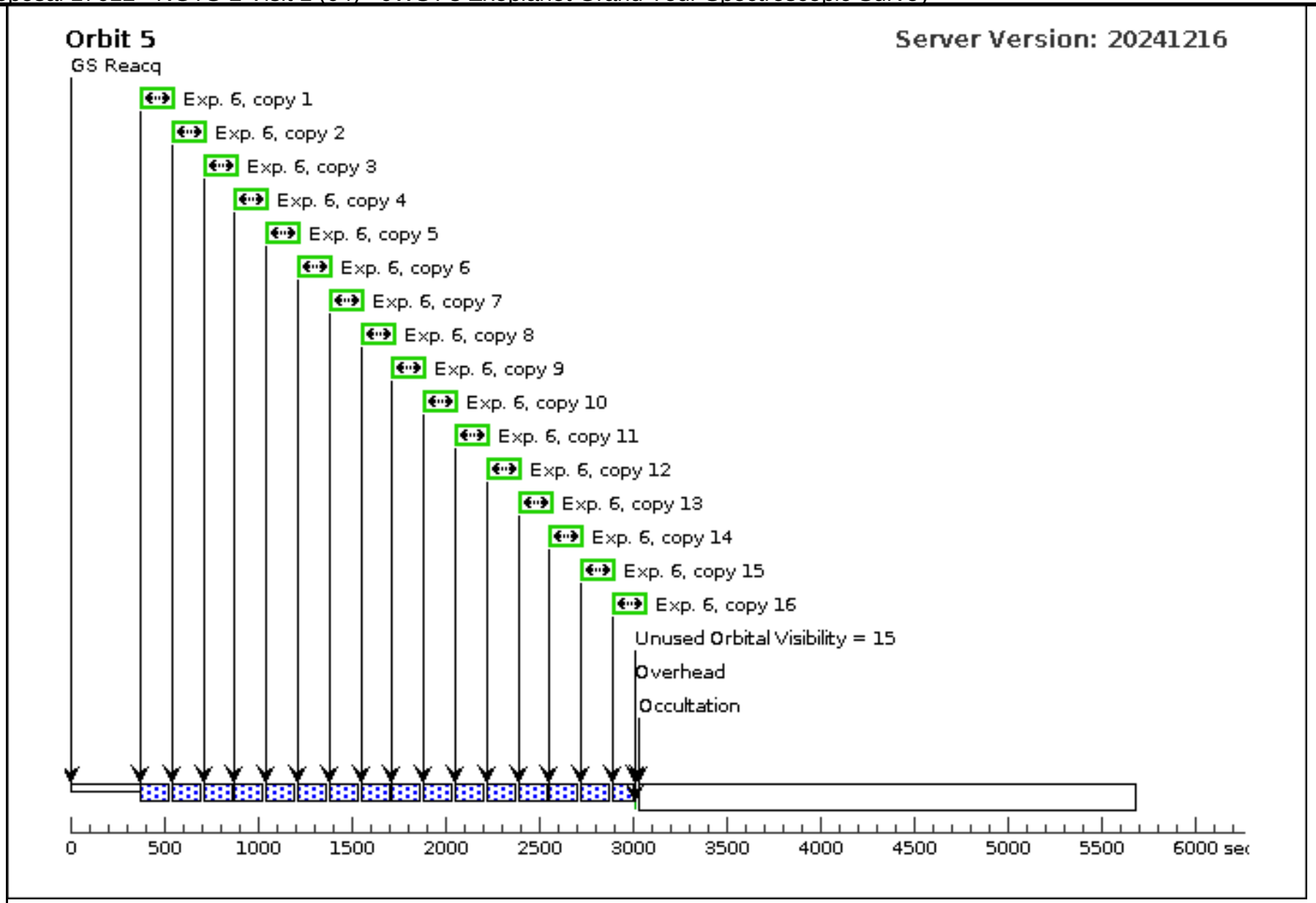
4500
5000
5500
6000 sec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GS Reacq
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Exp. 6, copy 10
Exp. 6, copy 11
Exp. 6, copy 12
Exp. 6, copy 13
Exp. 6, copy 14
Exp. 6, copy 15
Exp. 6, copy 16
Unused Orbital Visibility = 15
Overhead
Occultation
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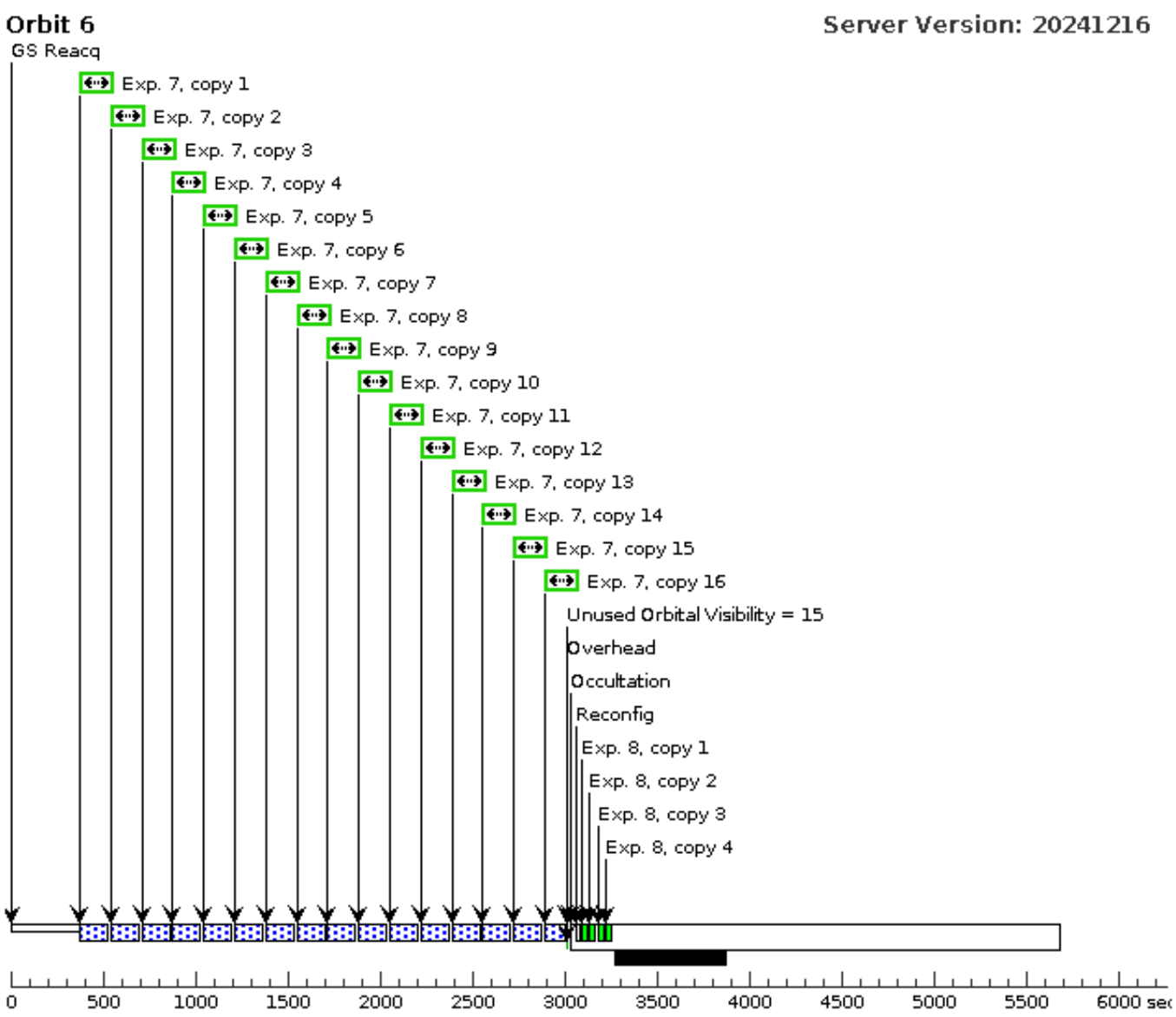
6000 sec


Orbit 6
Server Version: 20241216
GS Reacq
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Overhead
Occultation
Reconfig
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Exp. 8, copy 2
Exp. 8, copy 3
Exp. 8, copy 4
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6000 sec

Visit

Proposal 17612, HAT-P-30 Visit 1 (05), completed Thu Jan 09 19:00:33 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: SCHED 100%; ORIENT 0D TO 16 D; ORIENT 68D TO 75 D; ORIENT 95D TO 135 D; ORIENT 180D TO 196 D; ORIENT 248D TO 255 D; ORIENT 275D TO 315 D; Period 2.81060097 D AND ZERO-PHASE HJD2457825.80333

Comments: The optional parameters SIZEAXIS1=1700 and SIZEAXIS2=300 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 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=2136 and CENTERAXIS2=1216, which is intende to put 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. Each exposure in the visit must be observed sequentially with no interruption.

Diagnostics

(Filter Acquisition (05.001)) 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
(3)	HAT-P-30	RA: 08 15 47.9802 (123.9499175d)	Proper Motion RA: -17.231 mas/yr	V=10.35	Reference Frame: SIMBAD
		Dec: +05 50 12.35 (5.83676d)	Proper Motion Dec: 23.875 mas/yr		
		Equinox: J2000	Parallax: 0.0048037"		
			Epoch of Position: 2000		

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=STAR
Description=[EXTRA-SOLAR PLANET, 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	Filter Acquisition (WFC3UVIS.im.1923730)	(3) HAT-P-30	WFC3/UVIS, ACCUM, G280-REF	F300X	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=300	POS TARG null,-50; PHASE 0.9678795354096001 TO 0.9728211453465847	Sequence 1-2 Non-Int in HAT-P-30 Visit 1 (05)	4 Secs (4 Secs) *[==>]*	***[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=2250 and SIZEAXIS2=590 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574 & 15288 but have been adjusted to better center the zeroth order spectrum on the sub-array.

Exposure times have been chosen to achieve 2/3 well-depth.

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
2	Orbit 1 (WFC3UVIS.sp.1923767)	(3) HAT-P-30	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=300; FLASH=12	POS TARG null,-50	Sequence 1-2 Non-Int in HAT-P-30 Visit 1 (05)	71 Secs X 19 (1349 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]* *[==>(Copy 11)]* *[==>(Copy 12)]* *[==>(Copy 13)]* *[==>(Copy 14)]* *[==>(Copy 15)]* *[==>(Copy 16)]* *[==>(Copy 17)]* *[==>(Copy 18)]* *[==>(Copy 19)]*	***[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=1700 and SIZEAXIS2=300 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.

We use FLASH=12 to meet the nominal count level.

Exposure times have been chosen to achieve 2/3 well-depth and limit the amount of unused time per orbit.

3	Orbit 2 (WFC3UVIS.sp.1923767)	(3) HAT-P-30	WFC3/UVIS, ACCUM, UVIS	G280	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=300	POS TARG null,-50	Sequence 3-3 Non-Int in HAT-P-30 Visit 1 (05)	71 Secs X 20 (1420 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]* *[==>(Copy 11)]* *[==>(Copy 12)]* *[==>(Copy 13)]* *[==>(Copy 14)]* *[==>(Copy 15)]* *[==>(Copy 16)]* *[==>(Copy 17)]* *[==>(Copy 18)]* *[==>(Copy 19)]* *[==>(Copy 20)]*	***[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=1700 and SIZEAXIS2=300 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.

We use FLASH=12 to meet the nominal count level.

Exposure times have been chosen to achieve 2/3 well-depth and limit the amount of unused time per orbit.

4	Orbit 3 (WFC3UVIS.sp.1923767)	(3) HAT-P-30	WFC3/UVIS, ACCUM, UVIS	G280	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=300	POS TARG null,-50	Sequence 4-5 Non-Int in HAT-P-30 Visit 1 (05)	71 Secs X 20 (1420 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]* *[==>(Copy 11)]* *[==>(Copy 12)]* *[==>(Copy 13)]* *[==>(Copy 14)]* *[==>(Copy 15)]* *[==>(Copy 16)]* *[==>(Copy 17)]* *[==>(Copy 18)]* *[==>(Copy 19)]* *[==>(Copy 20)]*	***[3]***
5	Bias	BIAS	WFC3/UVIS, ACCUM, UVIS	DEF	CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=300		Sequence 4-5 Non-Int in HAT-P-30 Visit 1 (05)	0 Secs X 4 (0 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	***[3]***

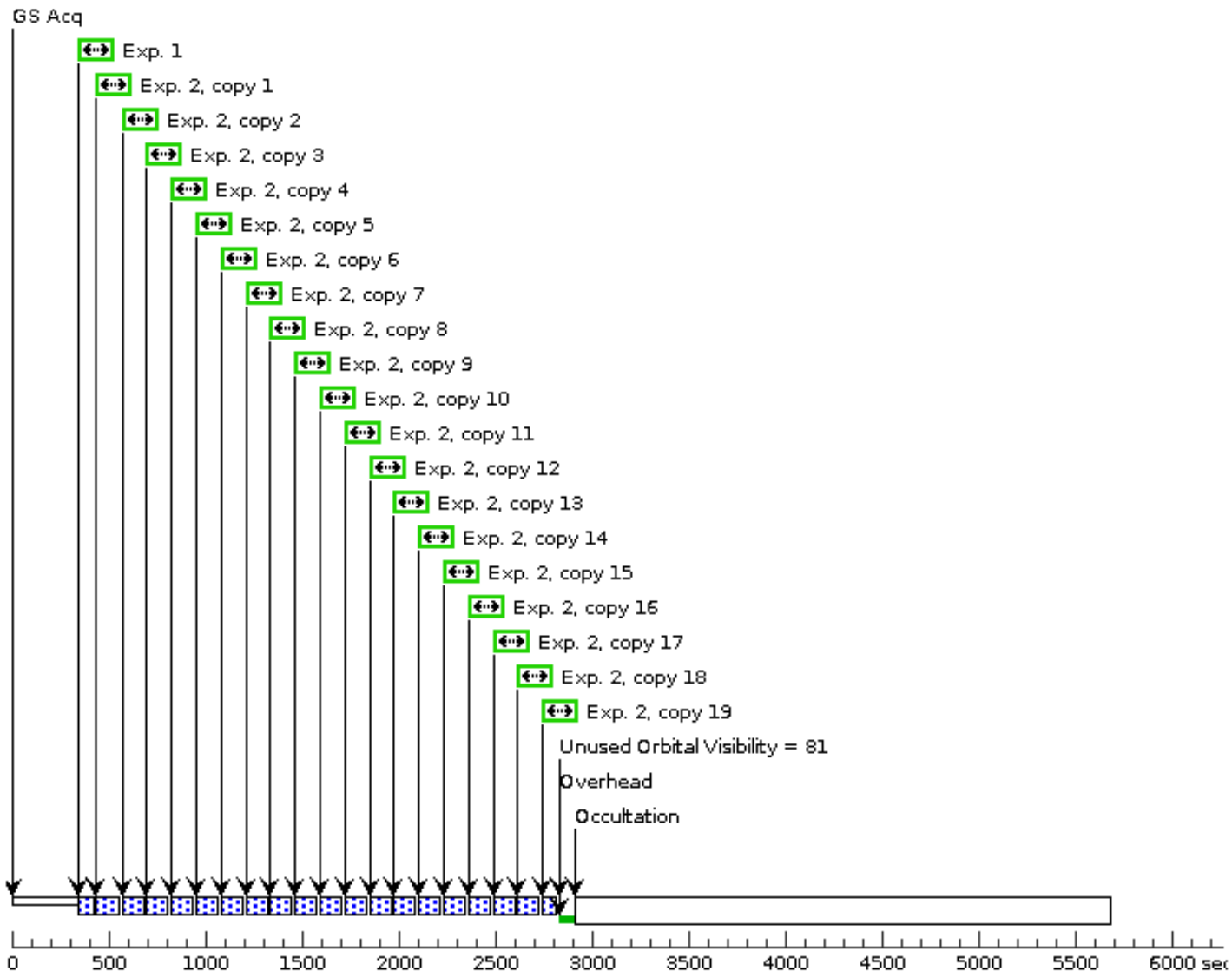
Comments: Nominal "UVIS" aperture is ~10" above the chip gap on chip 1; a Y-postarg of about -50" places the target near the center of subarray on chip 2.

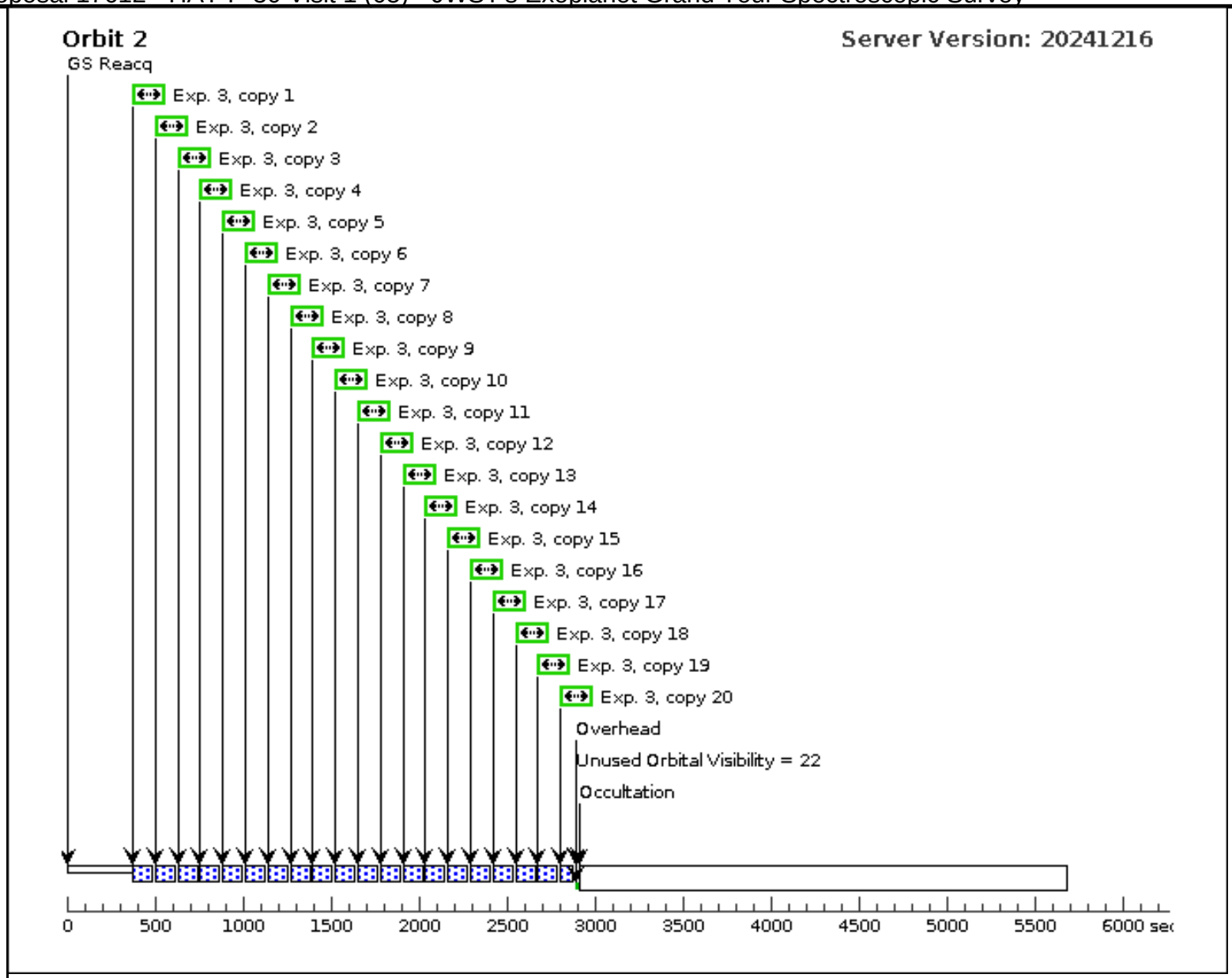
SIZEAXIS1=1700 and SIZEAXIS2=300 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.

We use FLASH=12 to meet the nominal count level.

Exposure times have been chosen to achieve 2/3 well-depth and limit the amount of unused time per orbit.

Orbit Structure

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Exp. 3, copy 20
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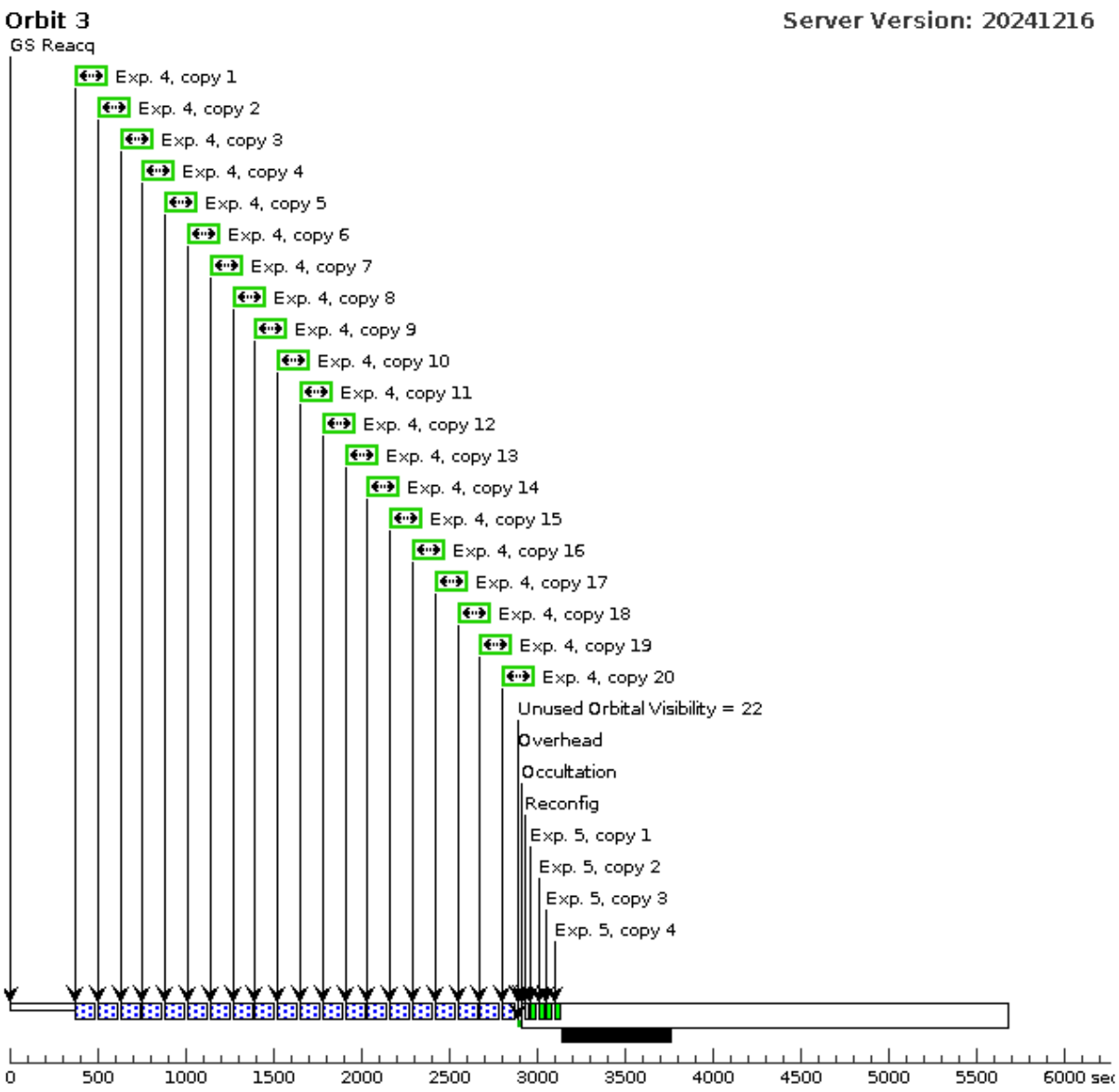
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Exp. 5, copy 2
Exp. 5, copy 3
Exp. 5, copy 4
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6000 sec

Visit

Proposal 17612, HAT-P-30 Visit 1 (06), failed Thu Jan 09 19:00:33 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: SCHED 100%; ORIENT 0D TO 16 D; ORIENT 68D TO 75 D; ORIENT 95D TO 135 D; ORIENT 180D TO 196 D; ORIENT 248D TO 255 D; ORIENT 275D TO 315 D; Period 2.81060097 D AND ZERO-PHASE HJD2457825.80333

Comments: The optional parameters SIZEAXIS1=1700 and SIZEAXIS2=300 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 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=2136 and CENTERAXIS2=1216, which is intende to put 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. Each exposure in the visit must be observed sequentially with no interruption.

Diagnostics

(Filter Acquisition (06.001)) 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
(3)	HAT-P-30	RA: 08 15 47.9802 (123.9499175d)	Proper Motion RA: -17.231 mas/yr	V=10.35	Reference Frame: SIMBAD
		Dec: +05 50 12.35 (5.83676d)	Proper Motion Dec: 23.875 mas/yr		
		Equinox: J2000	Parallax: 0.0048037"		
			Epoch of Position: 2000		

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=STAR
Description=[EXTRA-SOLAR PLANET, 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	Filter Acquisition (WFC3UVIS.im.1923730)	(3) HAT-P-30	WFC3/UVIS, ACCUM, G280-REF	F300X	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=300	POS TARG null,-50; PHASE 0.9678795354096001 TO 0.9728211453465847	Sequence 1-2 Non-Int in HAT-P-30 Visit 1 (06)	4 Secs (4 Secs) *[==>]*	***[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=2250 and SIZEAXIS2=590 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574 & 15288 but have been adjusted to better center the zeroth order spectrum on the sub-array.

Exposure times have been chosen to achieve 2/3 well-depth.

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
2	Orbit 1 (WFC3UVIS.sp.1923767)	(3) HAT-P-30	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=300; FLASH=12	POS TARG null,-50	Sequence 1-2 Non-Int in HAT-P-30 Visit 1 (06)	71 Secs X 19 (1349 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]* *[==>(Copy 11)]* *[==>(Copy 12)]* *[==>(Copy 13)]* *[==>(Copy 14)]* *[==>(Copy 15)]* *[==>(Copy 16)]* *[==>(Copy 17)]* *[==>(Copy 18)]* *[==>(Copy 19)]*	***[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=1700 and SIZEAXIS2=300 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.

We use FLASH=12 to meet the nominal count level.

Exposure times have been chosen to achieve 2/3 well-depth and limit the amount of unused time per orbit.

3	Orbit 2 (WFC3UVIS.sp.1923767)	(3) HAT-P-30	WFC3/UVIS, ACCUM, UVIS	G280	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=300	POS TARG null,-50	Sequence 3-3 Non-Int in HAT-P-30 Visit 1 (06)	71 Secs X 20 (1420 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]* *[==>(Copy 11)]* *[==>(Copy 12)]* *[==>(Copy 13)]* *[==>(Copy 14)]* *[==>(Copy 15)]* *[==>(Copy 16)]* *[==>(Copy 17)]* *[==>(Copy 18)]* *[==>(Copy 19)]* *[==>(Copy 20)]*	***[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.

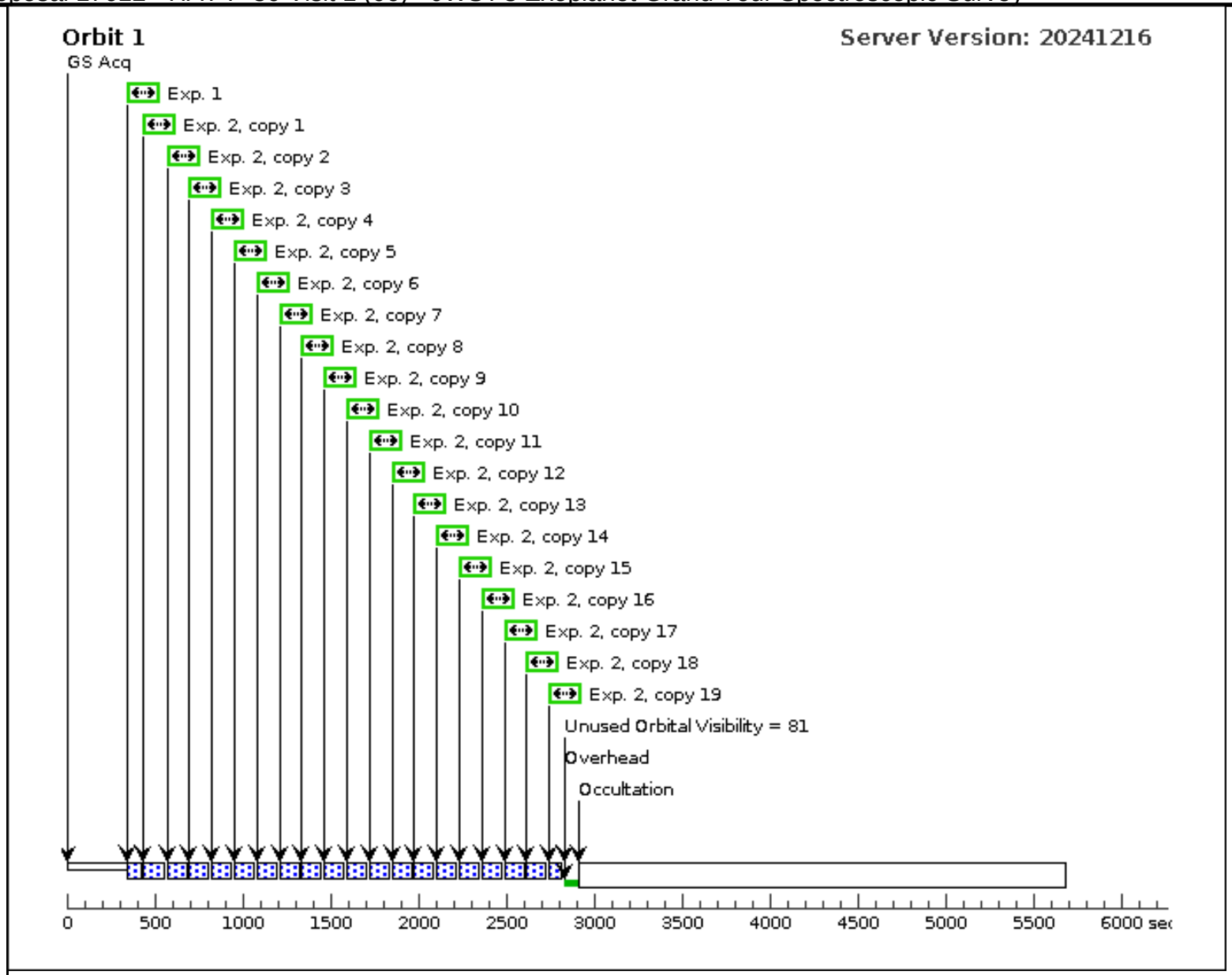
SIZEAXIS1=1700 and SIZEAXIS2=300 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.

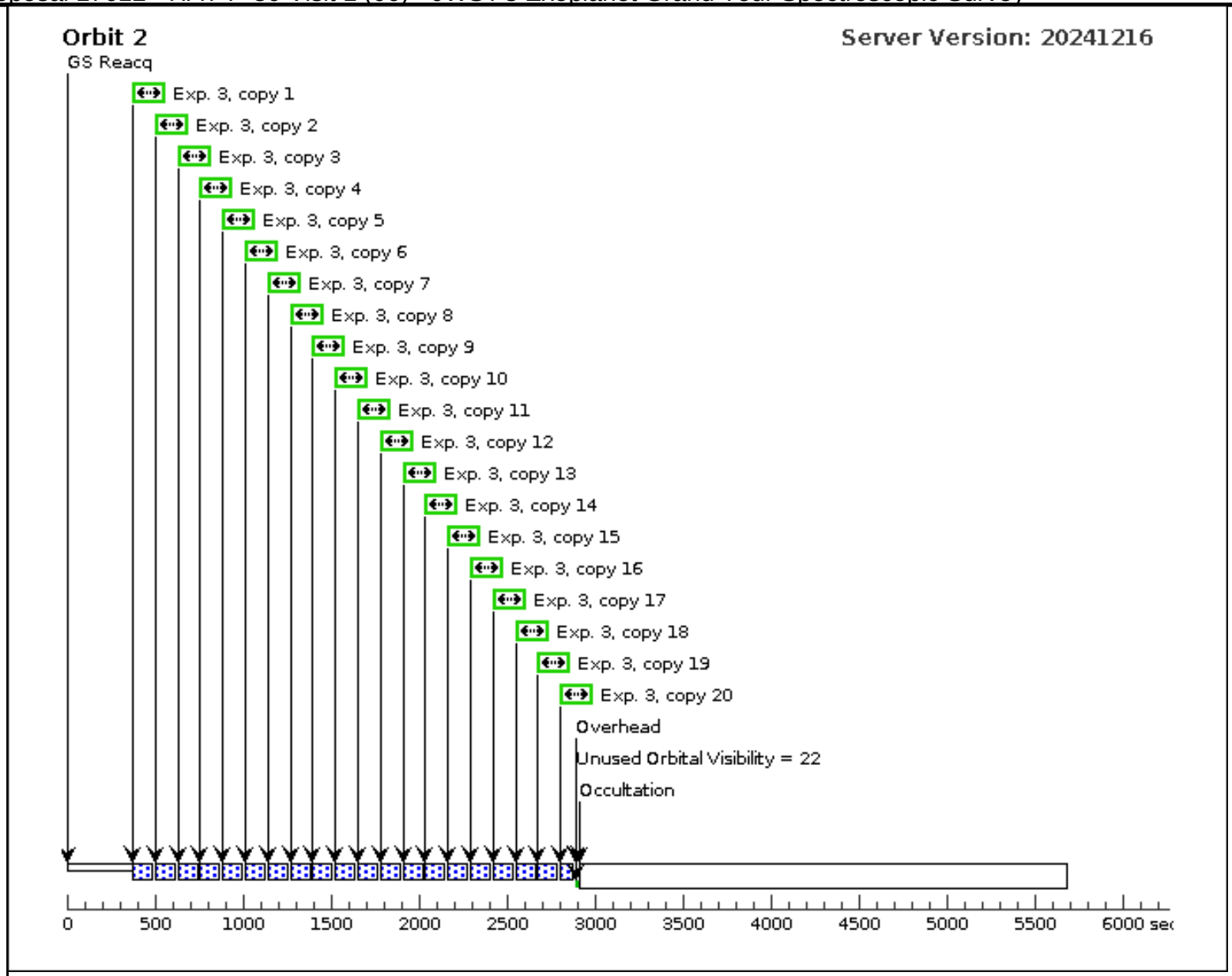
We use FLASH=12 to meet the nominal count level.

Exposure times have been chosen to achieve 2/3 well-depth and limit the amount of unused time per orbit.

4	Orbit 3 (WFC3UVIS.sp.1923767)	(3) HAT-P-30	WFC3/UVIS, ACCUM, UVIS	G280	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=300	POS TARG null,-50	Sequence 4-5 Non-Int in HAT-P-30 Visit 1 (06)	71 Secs X 20 (1420 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]* *[==>(Copy 11)]* *[==>(Copy 12)]* *[==>(Copy 13)]* *[==>(Copy 14)]* *[==>(Copy 15)]* *[==>(Copy 16)]* *[==>(Copy 17)]* *[==>(Copy 18)]* *[==>(Copy 19)]* *[==>(Copy 20)]*	***[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=1700 and SIZEAXIS2=300 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.* *We use FLASH=12 to meet the nominal count level.* *Exposure times have been chosen to achieve 2/3 well-depth and limit the amount of unused time per orbit.*									
5	Bias	BIAS	WFC3/UVIS, ACCUM, UVIS	DEF	CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=300		Sequence 4-5 Non-Int in HAT-P-30 Visit 1 (06)	0 Secs X 4 (0 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	***[3]***

Orbit Structure

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Exp. 3, copy 14
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Exp. 3, copy 18
Exp. 3, copy 19
Exp. 3, copy 20
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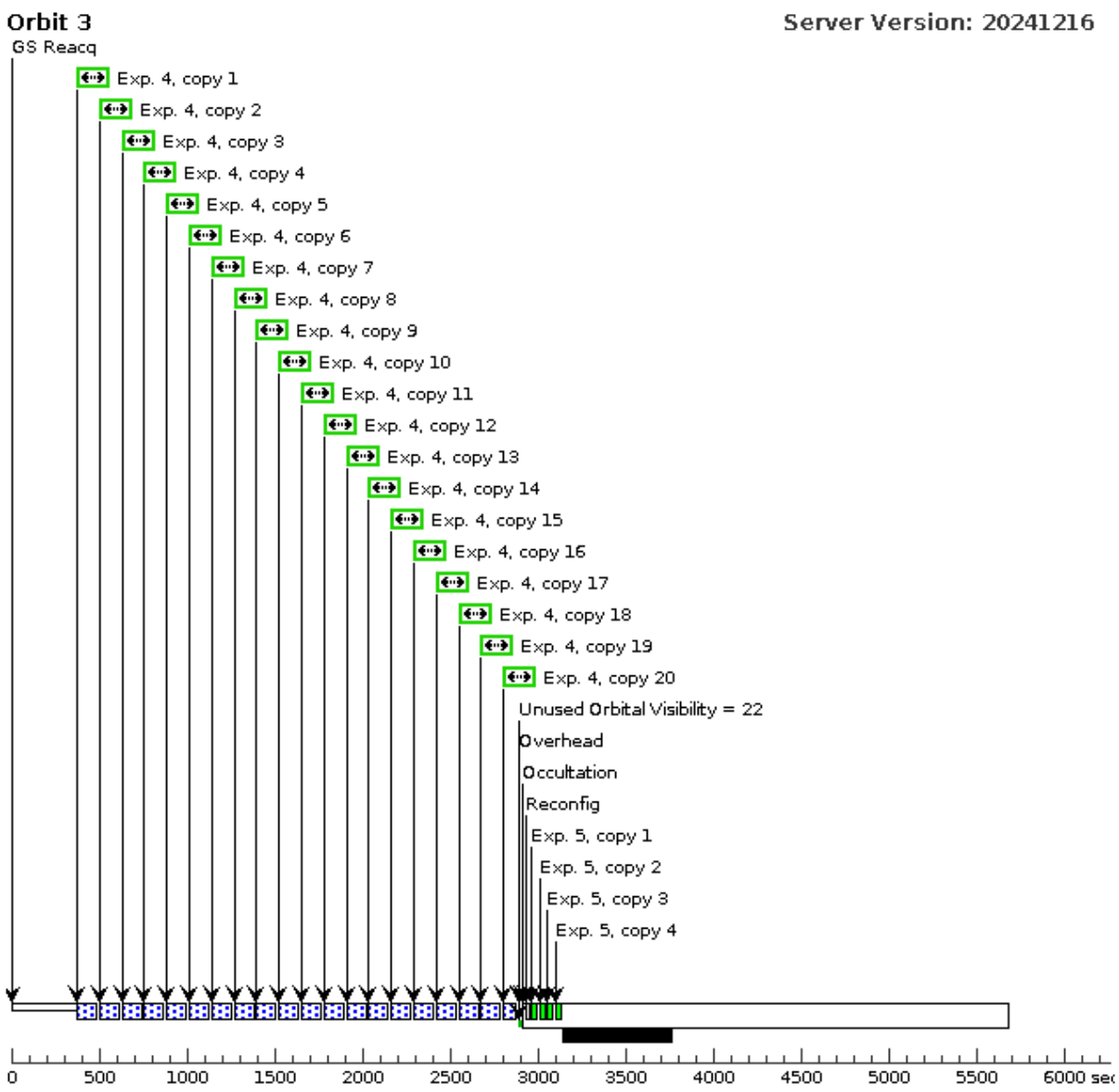
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000 sec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GS Reacq
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Exp. 4, copy 16
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Exp. 4, copy 19
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Unused Orbital Visibility = 22
Overhead
Occultation
Reconfig
Exp. 5, copy 1
Exp. 5, copy 2
Exp. 5, copy 3
Exp. 5, copy 4
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000 sec

Visit

Proposal 17612, HAT-P-30 Visit 56 (56) Thu Jan 09 19:00:34 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: SCHED 100%; ORIENT 0D TO 16 D; ORIENT 68D TO 75 D; ORIENT 95D TO 135 D; ORIENT 180D TO 196 D; ORIENT 248D TO 255 D; ORIENT 275D TO 315 D; Period 2.81060097 D AND ZERO-PHASE HJD2457825.80333

Comments: The optional parameters SIZEAXIS1=1700 and SIZEAXIS2=300 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 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=2136 and CENTERAXIS2=1216, which is intende to put 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. Each exposure in the visit must be observed sequentially with no interruption.

Diagnostics

(Filter Acquisition (56.001)) 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
(3)	HAT-P-30	RA: 08 15 47.9802 (123.9499175d)	Proper Motion RA: -17.231 mas/yr	V=10.35	Reference Frame: SIMBAD
		Dec: +05 50 12.35 (5.83676d)	Proper Motion Dec: 23.875 mas/yr		
		Equinox: J2000	Parallax: 0.0048037"		
			Epoch of Position: 2000		

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=STAR
Description=[EXTRA-SOLAR PLANET, 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	Filter Acquisition (WFC3UVIS.im.1923730)	(3) HAT-P-30	WFC3/UVIS, ACCUM, G280-REF	F300X	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=310	POS TARG null,-50; PHASE 0.9678795354096001 TO 0.9728211453465847	Sequence 1-2 Non-Int in HAT-P-30 Visit 56 (56)	4 Secs (4 Secs) *[==>]*	***[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=2250 and SIZEAXIS2=590 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574 & 15288 but have been adjusted to better center the zeroth order spectrum on the sub-array.

Exposure times have been chosen to achieve 2/3 well-depth.

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
2	Orbit 1 (WFC3UVIS.sp.1923767)	(3) HAT-P-30	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=310; FLASH=12	POS TARG null,-50	Sequence 1-2 Non-Int in HAT-P-30 Visit 56 (56)	71 Secs X 19 (1349 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]* *[==>(Copy 11)]* *[==>(Copy 12)]* *[==>(Copy 13)]* *[==>(Copy 14)]* *[==>(Copy 15)]* *[==>(Copy 16)]* *[==>(Copy 17)]* *[==>(Copy 18)]* *[==>(Copy 19)]*	***[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=1700 and SIZEAXIS2=310 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.

We use FLASH=12 to meet the nominal count level.

Exposure times have been chosen to achieve 2/3 well-depth and limit the amount of unused time per orbit.

3	Orbit 2 (WFC3UVIS.sp.1923767)	(3) HAT-P-30	WFC3/UVIS, ACCUM, UVIS	G280	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=310	POS TARG null,-50	Sequence 3-3 Non-Int in HAT-P-30 Visit 56 (56)	71 Secs X 20 (1420 Secs)		
								[==>(Copy 1)] *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]* *[==>(Copy 11)]* *[==>(Copy 12)]* *[==>(Copy 13)]* *[==>(Copy 14)]* *[==>(Copy 15)]* *[==>(Copy 16)]* *[==>(Copy 17)]* *[==>(Copy 18)]* *[==>(Copy 19)]* *[==>(Copy 20)]*	***[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.

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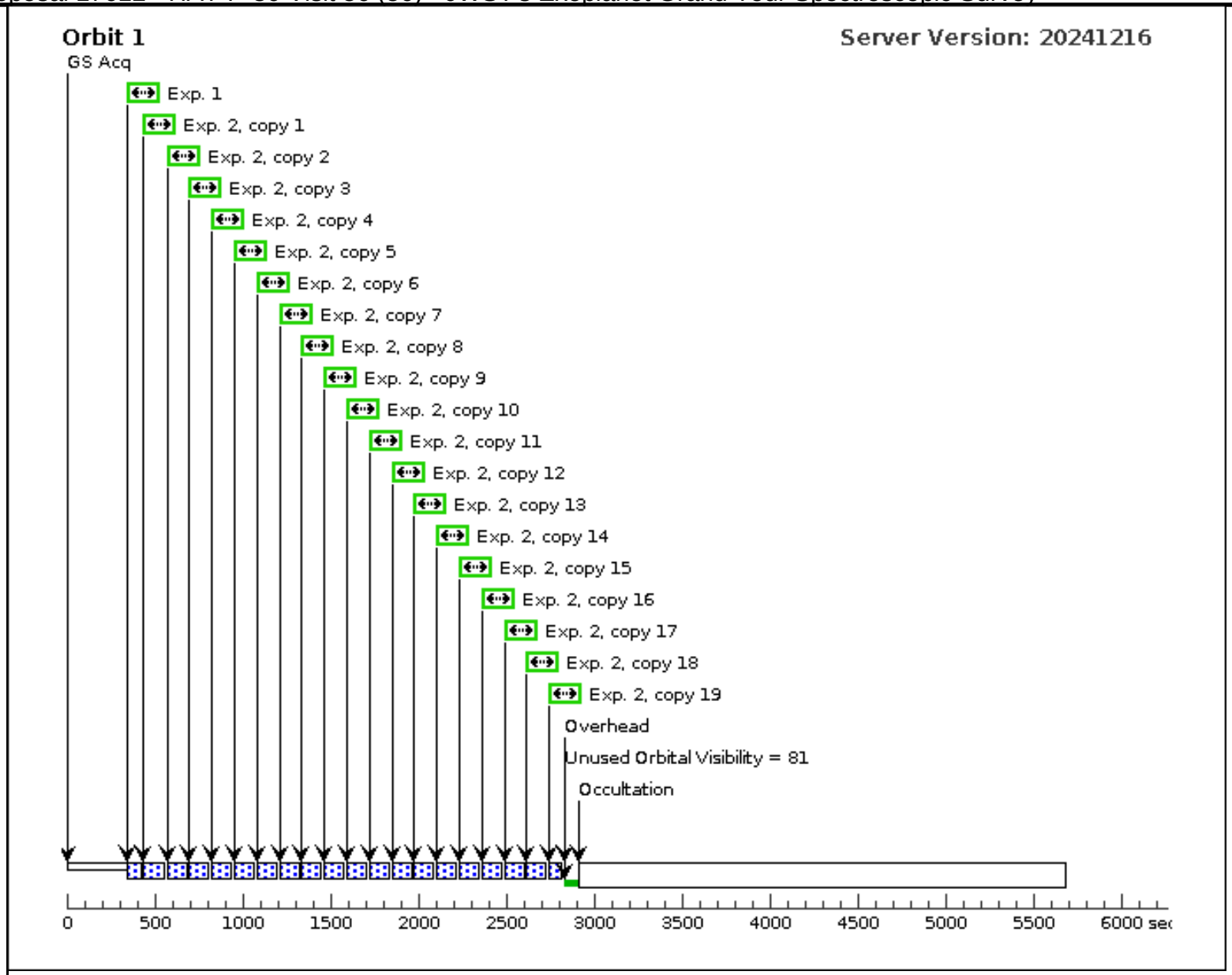
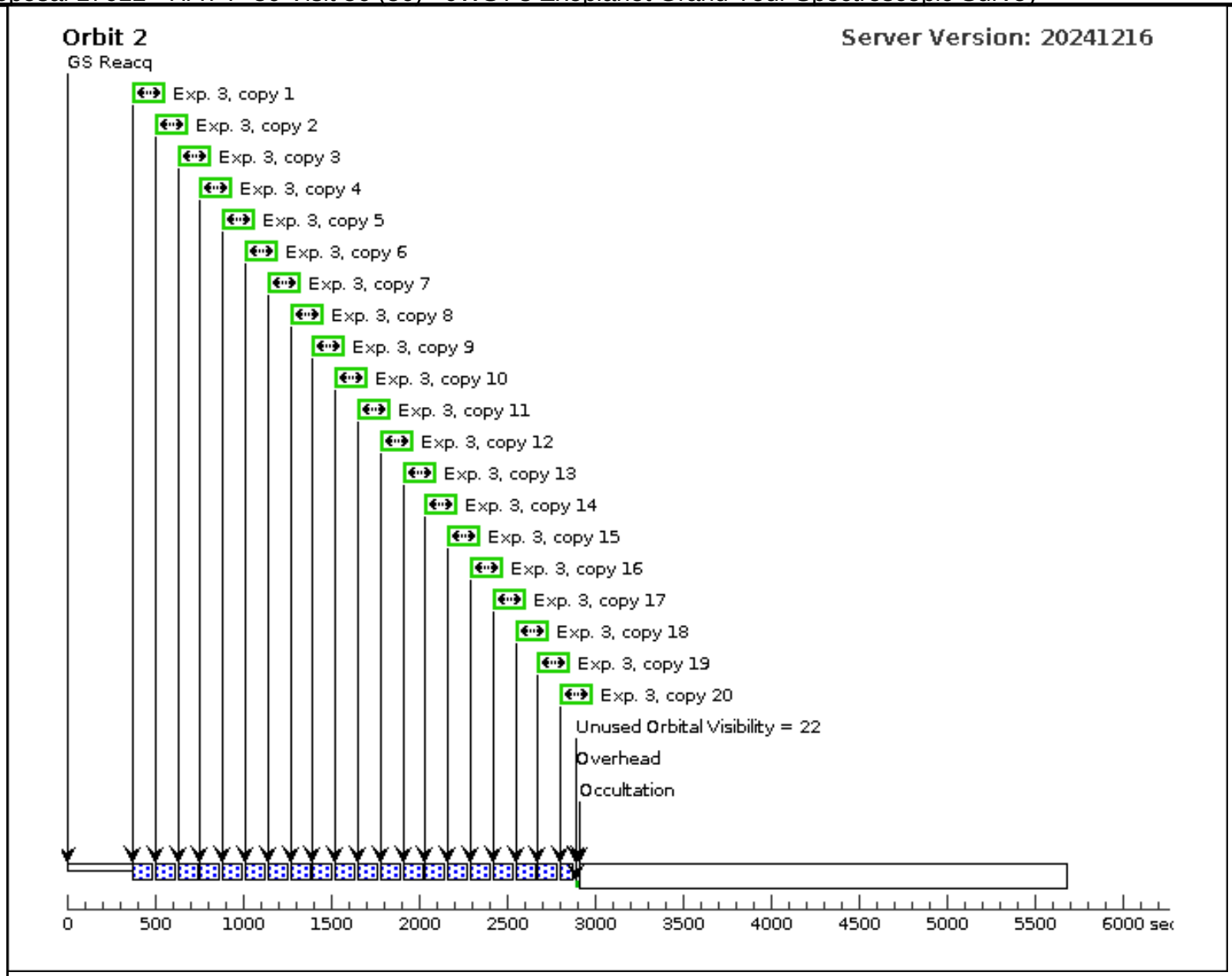
We use FLASH=12 to meet the nominal count level.

Exposure times have been chosen to achieve 2/3 well-depth and limit the amount of unused time per orbit.

	4	Orbit 3 (WFC3UVIS.sp.1923767)	(3) HAT-P-30	WFC3/UVIS, ACCUM, UVIS	G280	FLASH=12; CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=310	POS TARG null,-50	Sequence 4-5 Non-Int in HAT-P-30 Visit 56 (56)	71 Secs X 20 (1420 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]* *[==>(Copy 11)]* *[==>(Copy 12)]* *[==>(Copy 13)]* *[==>(Copy 14)]* *[==>(Copy 15)]* *[==>(Copy 16)]* *[==>(Copy 17)]* *[==>(Copy 18)]* *[==>(Copy 19)]* *[==>(Copy 20)]*	***[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=1700 and SIZEAXIS2=310 are used to minimize data volume, while CENTERAXIS1 and CENTERAXIS2 are used to center the subarray readout on the zeroth order of G280 spectrum. These parameters are based upon similar observations obtained successfully in GOs 13574, 15288, and 17162 but have been adjusted to better center the zeroth order spectrum on the sub-array.* *We use FLASH=12 to meet the nominal count level.* *Exposure times have been chosen to achieve 2/3 well-depth and limit the amount of unused time per orbit.*								
	5	Bias	BIAS	WFC3/UVIS, ACCUM, UVIS	DEF	CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=1700; SIZEAXIS2=310		Sequence 4-5 Non-Int in HAT-P-30 Visit 56 (56)	0 Secs X 4 (0 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	***[3]***

Orbit Structure

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Exp. 3, copy 15
Exp. 3, copy 16
Exp. 3, copy 17
Exp. 3, copy 18
Exp. 3, copy 19
Exp. 3, copy 20
Unused Orbital Visibility = 22
Overhead
Occultation
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1000
1500
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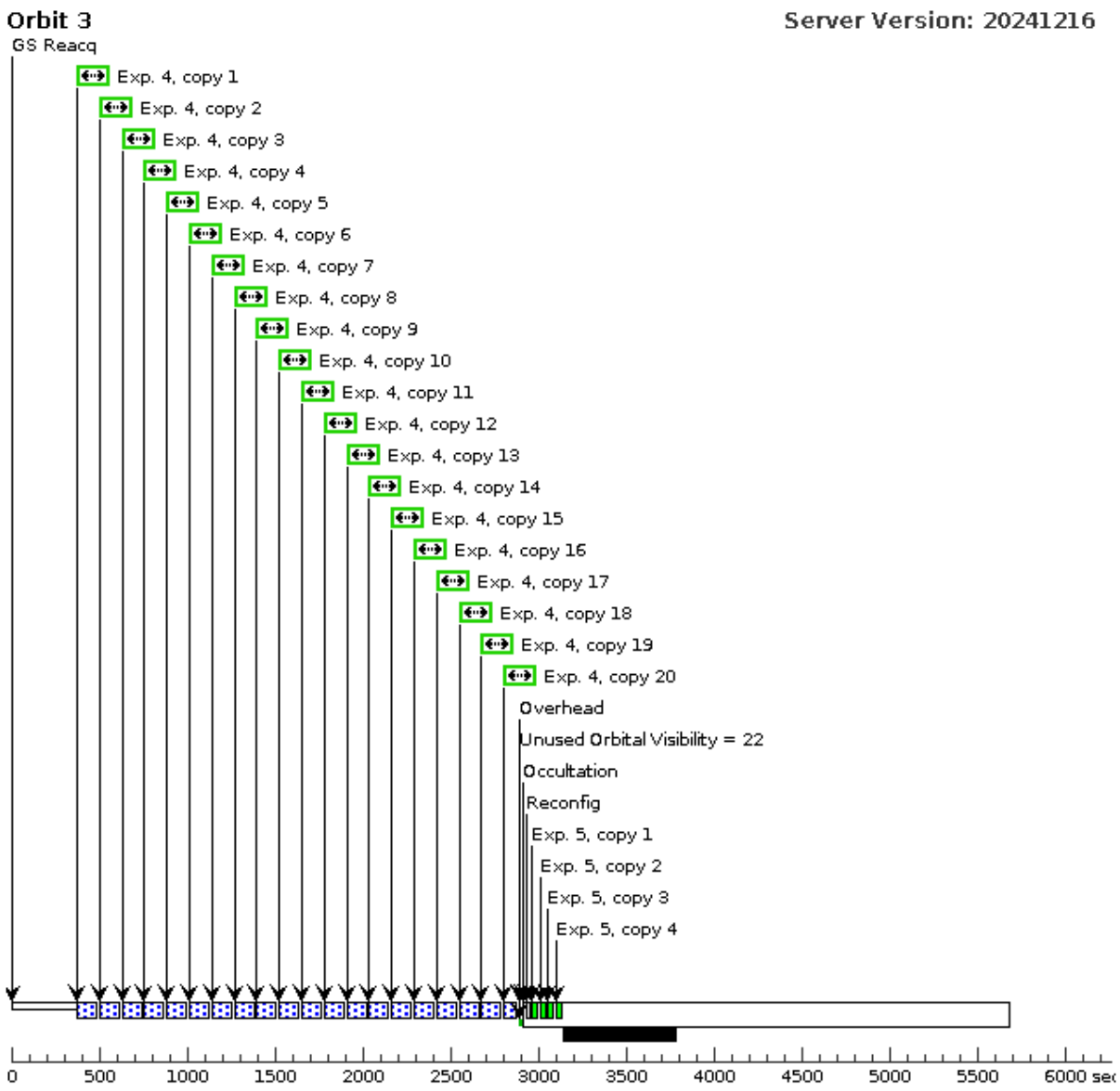
2500
3000
3500
4000
4500
5000
5500
6000 sec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GS Reacq
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Exp. 4, copy 15
Exp. 4, copy 16
Exp. 4, copy 17
Exp. 4, copy 18
Exp. 4, copy 19
Exp. 4, copy 20
Overhead
Unused Orbital Visibility = 22
Occultation
Reconfig
Exp. 5, copy 1
Exp. 5, copy 2
Exp. 5, copy 3
Exp. 5, copy 4
0
500
1000
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2000
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3000
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6000 sec