



# 17418 - Upon Reflection: Unveiling a Cloud Transition with a High-Precision Reflected Light Spectrum

Cycle: 31, Proposal Category: GO

(Availability Mode: AVAILABLE)

## INVESTIGATORS

<i>Name</i>	<i>Institution</i>
<b>Dr. Natasha Batalha (PI) (Contact)</b>	<b>NASA Ames Research Center</b>
Dr. Hannah Wakeford (CoI) (ESA Member) (CoPI) (Contact)	University of Bristol
Dr. Mark S. Marley (CoI)	University of Arizona
Dr. Laura C Mayorga (CoI)	The Johns Hopkins University Applied Physics Laboratory
Dr. Nikole Lewis (CoI)	Cornell University
Dr. Lili Alderson (CoI)	Cornell University
Prof. Jayne Birkby (CoI) (ESA Member)	University of Oxford
Dr. Diana Powell (CoI)	University of Chicago
Dr. Taylor James Bell (CoI) (ESA Member)	Space Telescope Science Institute - ESA - JWST
Dr. Sarah E. Moran (CoI)	NASA Goddard Space Flight Center
Dr. Thomas P. Greene (CoI)	NASA Ames Research Center
Dr. Everett Schlawin (CoI)	University of Arizona

## VISITS

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
01	(1) WASP-69	WFC3/UVIS	4	11-Feb-2025 12:00:15.0	yes
02	(1) WASP-69	WFC3/UVIS	4	11-Feb-2025 12:00:18.0	yes
03	(1) WASP-69	WFC3/UVIS	4	11-Feb-2025 12:00:22.0	yes

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
04	(1) WASP-69	WFC3/UVIS	4	11-Feb-2025 12:00:25.0	yes
05	(1) WASP-69	WFC3/UVIS	4	11-Feb-2025 12:00:29.0	yes

20 Total Orbits Used

## **ABSTRACT**

Measuring reflected light of exoplanets in the optical gives us a unique view of the stellar radiation backscattered by the atmosphere or surface. Unlike transmission and emission spectra, reflected light is uniquely sensitive to the properties of aerosols and ultimately reveals how much energy is absorbed by the planet contributing to its overall energy budget and climate. Yet, few measurements of reflected light have been made, with only two published results of spectroscopic albedo measurements probing the wavelength dependence of scattered light. Here we propose to utilize the spectroscopic capabilities of WFC3's UVIS G280 grism to measure the reflected light from 350-800nm of Saturn-mass exoplanet WASP-69b, which will make it the coolest object studied with reflected light spectroscopy. We will: 1) obtain a benchmark high-precision exoplanet reflected light spectrum, 2) extend the temperature phase space of exoplanets probed in reflected light to uncharted parameter space, and 3) uniquely complement existing JWST observations by providing information that could unveil key transitions in cloud physics regimes. WASP-69b has an equilibrium temperature of 990K, putting it in a regime where a dominant cloud transition process analogous to the L/T transition on Brown Dwarfs may be occurring. Results from this program will not only allow us to begin unveiling these key cloud processes, but will also kick-start investigations needed to enable successful direct imaging missions (Nancy Grace Roman Space Telescope, HWO) whose goals are to study reflected light spectroscopy of exoplanet atmospheres.

## **OBSERVING DESCRIPTION**

We will perform five secondary eclipse observations of the hot Jupiter WASP-69b using WFC3/UVIS G280. Each visit consists of four HST orbits each with 20 exposures of 73 seconds. The first orbit will contain an additional exposure for the F300X filter image to accurately obtain the position of the star in the subarray for wavelength calibration. Each visit is phase constrained to an eclipse event for zero phase 2457176.17789 with a period of 3.86814 starting between 0.4680437856150214 and 0.47163437150097404 (calculated using Pandexo). Each exposure is performed in a subarray with a postage of -50 so that the target is positioned in the center of chip2, and size axis[1,2] = 2050, 450 and center axis[1,2] = 2048, 1208. Subarrays are used to increase the efficiency of observations and reduce the number of buffer dumps which should occur during Earth occultation events. There are no orient constraints placed on these observations.

# Proposal 17418 - Visit 01 - Upon Reflection: Unveiling a Cloud Transition with a High-Precision Reflected Light Spectrum

Tue Feb 11 17:00:30 GMT 2025

<b>Visit</b>	<p><b>Proposal 17418, Visit 01, completed</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Scientific Instruments: WFC3/UVIS</p> <p>Special Requirements: Period 3.86814 D AND ZERO-PHASE HJD2457176.17789</p>					
<b>Diagnostics</b>	<p>(Visit 01) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN</p> <p>(Visit 01) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN</p> <p>(Visit 01) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN</p> <p>(Visit 01) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN</p> <p>(Exposure 1 (Sequence 1-2 Non-Int in Visit 01)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p> <p>(Exposure 2 (Sequence 1-2 Non-Int in Visit 01)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p> <p>(Exposure 3 (Sequence 3-3 Non-Int in Visit 01)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p> <p>(Exposure 4 (Sequence 4-4 Non-Int in Visit 01)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p> <p>(Exposure 5 (Sequence 5-5 Non-Int in Visit 01)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p>					
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>	<b>Miscellaneous</b>
	(1)	WASP-69	RA: 21 00 6.2319 (315.0259663d) Dec: -05 05 41.49 (-5.09486d) Equinox: J2000	Proper Motion RA: 0.0022539720183223475 sec of time/yr Proper Motion Dec: -0.09343599992917007 arcsec/yr Epoch of Position: 2015.5	V=9.87	Reference Frame: SIMBAD
	<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>Category=STAR</i></p> <p><i>Description=[EXTRA-SOLAR PLANET, EXTRA-SOLAR PLANETARY SYSTEM, K III-I]</i></p> <p><i>Extended=NO</i></p>					

Proposal 17418 - Visit 01 - Upon Reflection: Unveiling a Cloud Transition with a High-Precision Reflected Light Spectrum

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(WFC3UVI S.im.188960 6)	(1) WASP-69	WFC3/UVIS, ACCUM, UVIS	F300X	SIZEAXIS1=2150; SIZEAXIS2=450; CENTERAXIS1=20 48; CENTERAXIS2=12 08	POS TARG null,-50; PHASE 0.46804378 56150214 TO 0.4716 3437150097404	Sequence 1-2 Non-In t in Visit 01	18 Secs (18 Secs)	[1]
								[==>]	
2	(WFC3UVI S.sp.188960 7)	(1) WASP-69	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS1=2150; SIZEAXIS2=450; CENTERAXIS1=21 48; CENTERAXIS2=12 08	POS TARG null,-50	Sequence 1-2 Non-In t in Visit 01	73 Secs X 20 (1460 Secs)	[1]
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[==>(Copy 20)]									

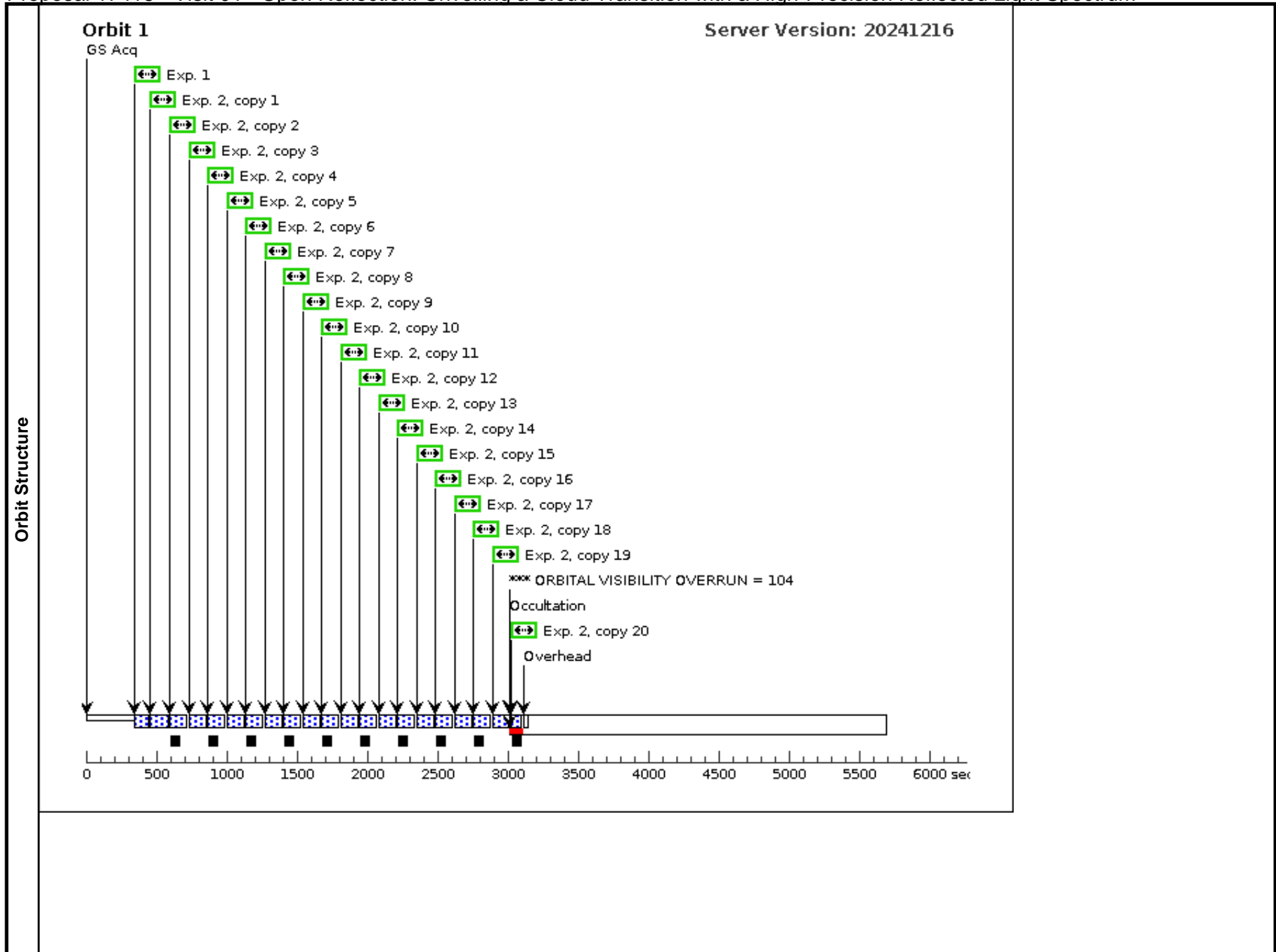
Exposures

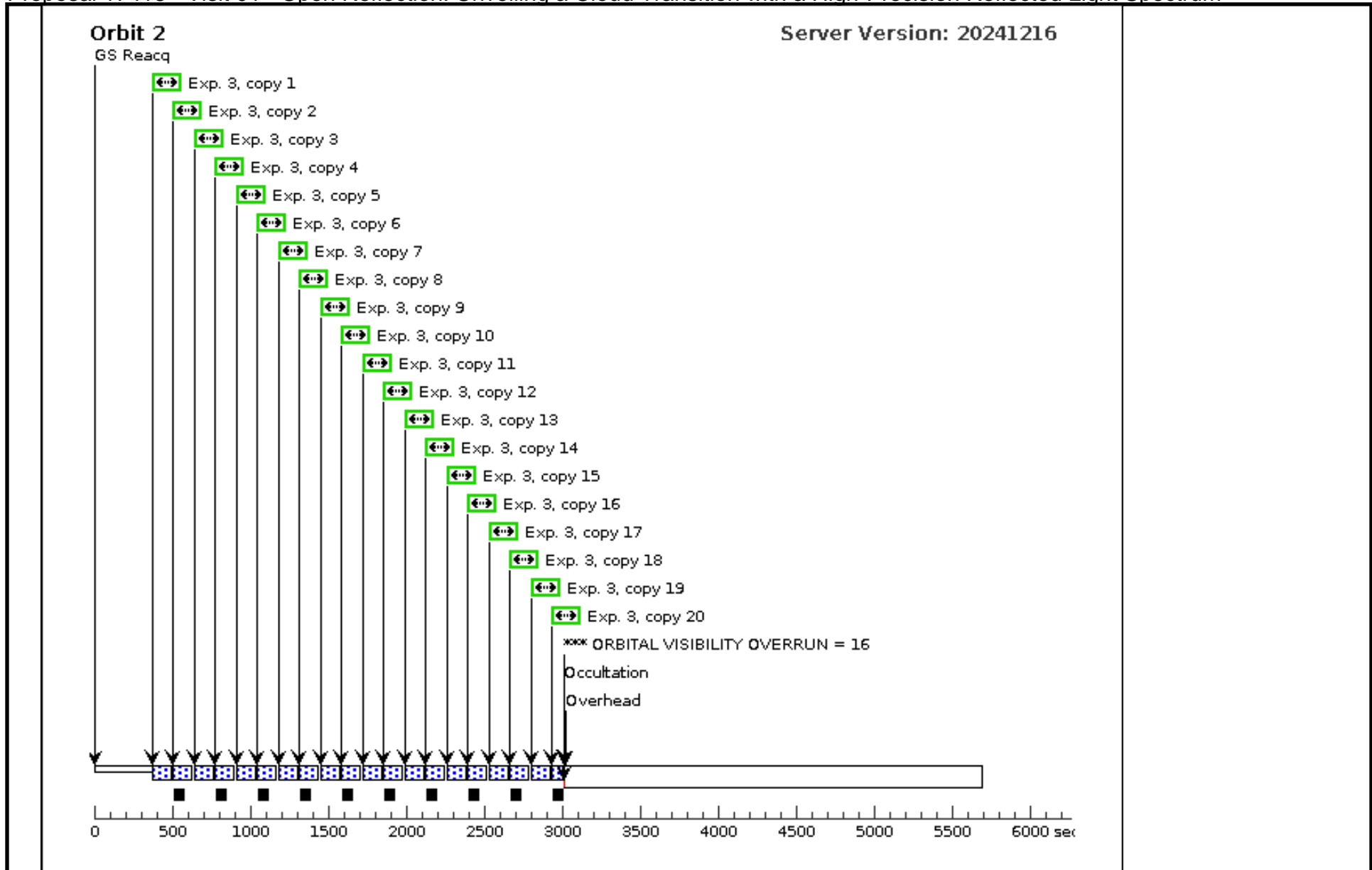
Proposal 17418 - Visit 01 - Upon Reflection: Unveiling a Cloud Transition with a High-Precision Reflected Light Spectrum

3	(WFC3UVI (1) WASP-69 S.sp.188960 7)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS1=2150; SIZEAXIS2=450; CENTERAXIS1=21 48; CENTERAXIS2=12 08	POS TARG null,-50	Sequence 3-3 Non-Int in Visit 01	73 Secs X 20 (1460 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]
4	(WFC3UVI (1) WASP-69 S.sp.188960 7)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS1=2150; SIZEAXIS2=450; CENTERAXIS1=21 48; CENTERAXIS2=12 08	POS TARG null,-50	Sequence 4-4 Non-Int in Visit 01	73 Secs X 20 (1460 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]

Proposal 17418 - Visit 01 - Upon Reflection: Unveiling a Cloud Transition with a High-Precision Reflected Light Spectrum

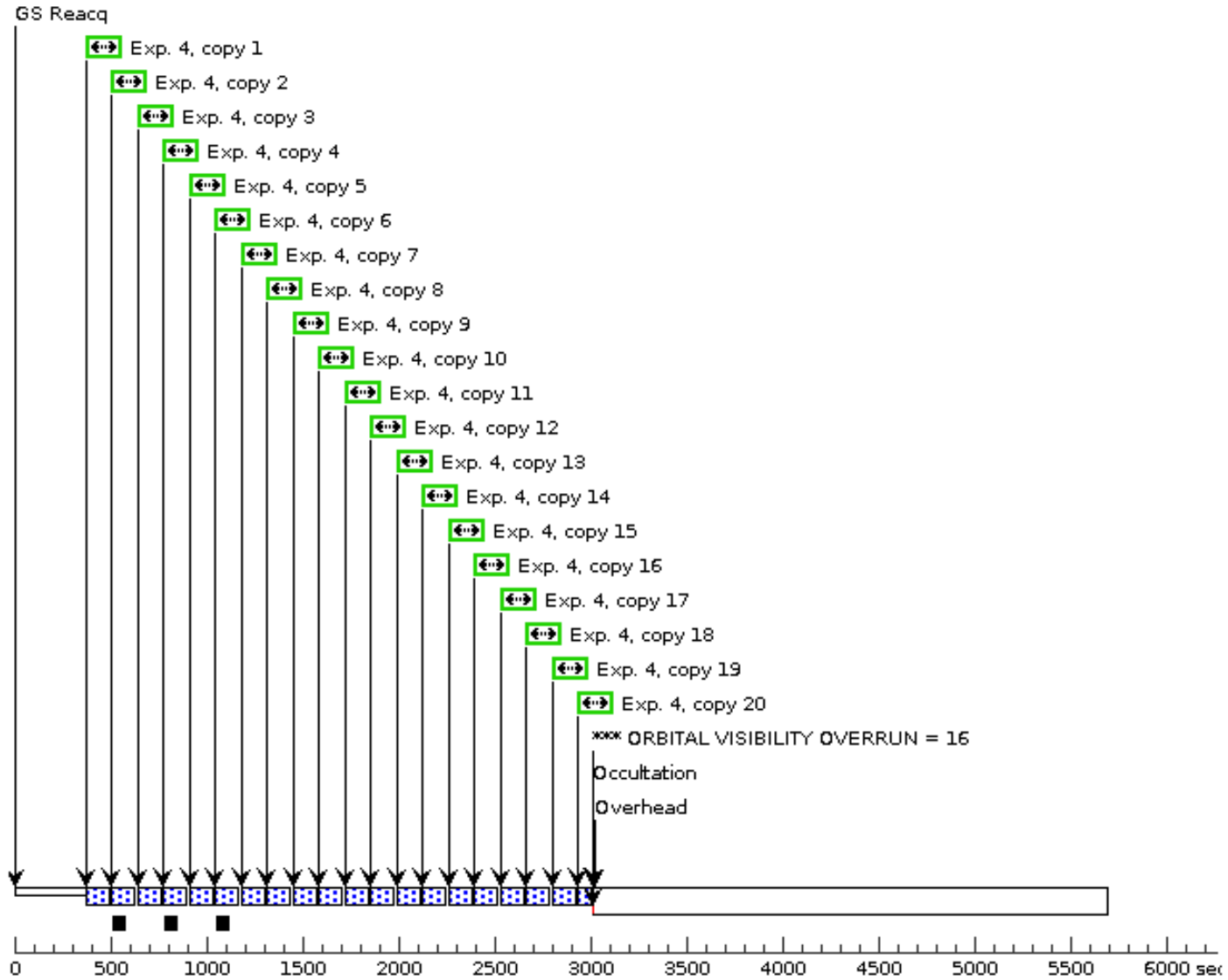
5	(WFC3UVI (1) WASP-69 S.sp.188960 7)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS1=2150; SIZEAXIS2=450; CENTERAXIS1=2148; CENTERAXIS2=1208	POS TARG null,-50 Sequence 5-5 Non-Int in Visit 01	73 Secs X 20 (1460 Secs) [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)] [==>(Copy 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)]	[4]
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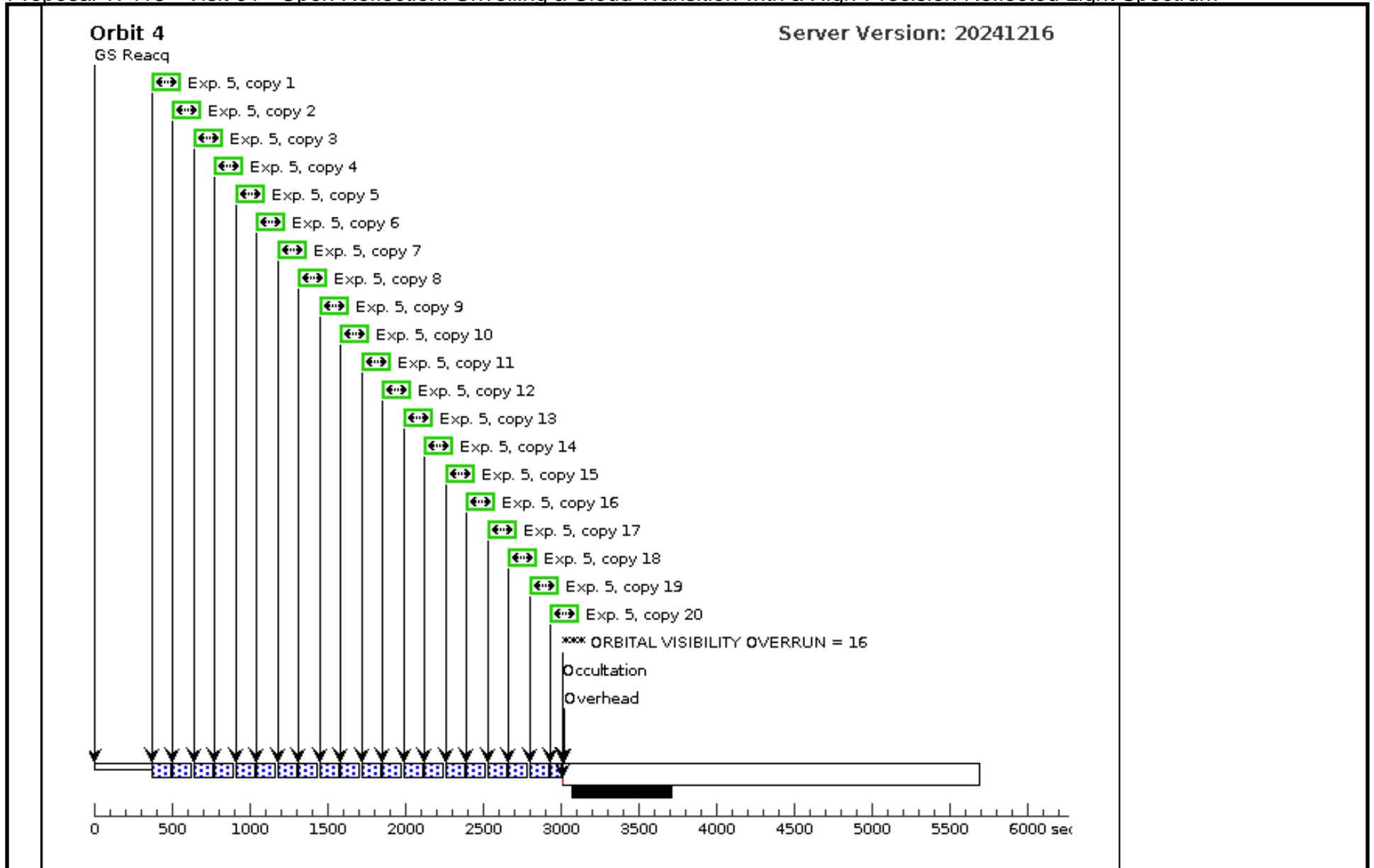




Orbit 3

Server Version: 20241216





# Proposal 17418 - Visit 02 - Upon Reflection: Unveiling a Cloud Transition with a High-Precision Reflected Light Spectrum

Tue Feb 11 17:00:30 GMT 2025

<b>Visit</b>	<b>Proposal 17418, Visit 02, completed</b> <b>Diagnostic Status: Warning</b> Scientific Instruments: WFC3/UVIS Special Requirements: Period 3.86814 D AND ZERO-PHASE HJD2457176.17789																	
<b>Diagnostics</b>	(Exposure 1 (Sequence 1-2 Non-Int in Visit 02)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser (Exposure 2 (Sequence 1-2 Non-Int in Visit 02)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser (Exposure 3 (Sequence 3-3 Non-Int in Visit 02)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser (Exposure 4 (Sequence 4-4 Non-Int in Visit 02)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser (Exposure 5 (Sequence 5-5 Non-Int in Visit 02)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser																	
<b>Fixed Targets</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td>WASP-69</td> <td>RA: 21 00 6.2319 (315.0259663d) Dec: -05 05 41.49 (-5.09486d) Equinox: J2000</td> <td>Proper Motion RA: 0.0022539720183223475 sec of time/yr Proper Motion Dec: -0.09343599992917007 arcsec/yr Epoch of Position: 2015.5</td> <td>V=9.87</td> <td>Reference Frame: SIMBAD</td> </tr> </tbody> </table> <p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>                  Category=STAR                  Description=[EXTRA-SOLAR PLANET, EXTRA-SOLAR PLANETARY SYSTEM, K III-I]                  Extended=NO</p>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(1)	WASP-69	RA: 21 00 6.2319 (315.0259663d) Dec: -05 05 41.49 (-5.09486d) Equinox: J2000	Proper Motion RA: 0.0022539720183223475 sec of time/yr Proper Motion Dec: -0.09343599992917007 arcsec/yr Epoch of Position: 2015.5	V=9.87	Reference Frame: SIMBAD					
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous													
(1)	WASP-69	RA: 21 00 6.2319 (315.0259663d) Dec: -05 05 41.49 (-5.09486d) Equinox: J2000	Proper Motion RA: 0.0022539720183223475 sec of time/yr Proper Motion Dec: -0.09343599992917007 arcsec/yr Epoch of Position: 2015.5	V=9.87	Reference Frame: SIMBAD													

Proposal 17418 - Visit 02 - Upon Reflection: Unveiling a Cloud Transition with a High-Precision Reflected Light Spectrum

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(WFC3UVI S.im.188960 6)	(1) WASP-69	WFC3/UVIS, ACCUM, UVIS	F300X	SIZEAXIS1=2150; SIZEAXIS2=450; CENTERAXIS1=20 48; CENTERAXIS2=12 08	POS TARG null,-50; PHASE 0.46804378 56150214 TO 0.4716 3437150097404	Sequence 1-2 Non-In t in Visit 02	18 Secs (18 Secs)	
								[==>]	[1]
2	(WFC3UVI S.sp.188960 7)	(1) WASP-69	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS1=2150; SIZEAXIS2=450; CENTERAXIS1=21 48; CENTERAXIS2=12 08	POS TARG null,-50	Sequence 1-2 Non-In t in Visit 02	73 Secs X 19 (1387 Secs)	
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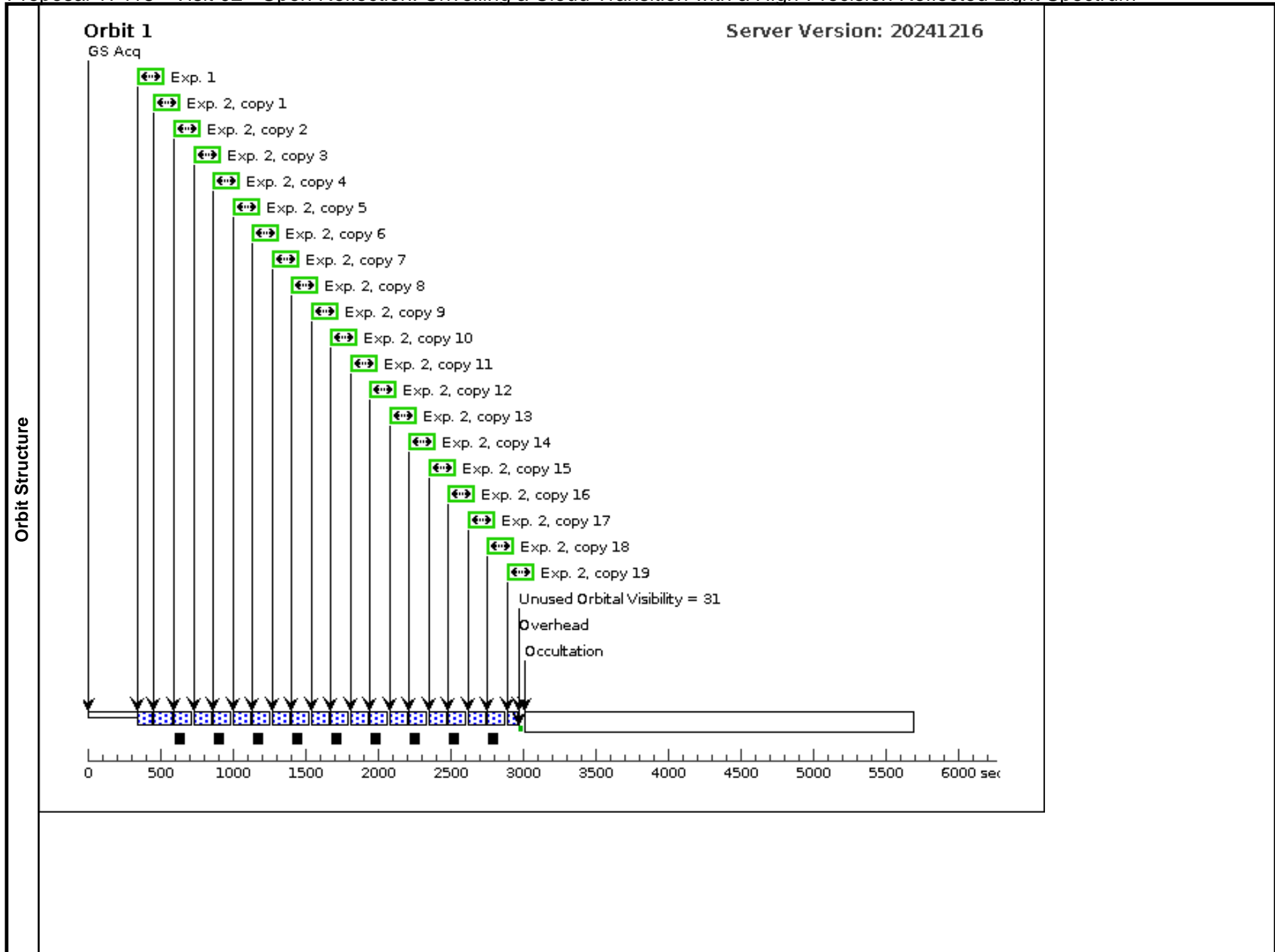
Exposures

Proposal 17418 - Visit 02 - Upon Reflection: Unveiling a Cloud Transition with a High-Precision Reflected Light Spectrum

3	(WFC3UVI (1) WASP-69 S.sp.188960 7)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS1=2150; SIZEAXIS2=450; CENTERAXIS1=21 48; CENTERAXIS2=12 08	POS TARG null,-50 Sequence 3-3 Non-Int in Visit 02	73 Secs X 19 (1387 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)]	[2]
4	(WFC3UVI (1) WASP-69 S.sp.188960 7)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS1=2150; SIZEAXIS2=450; CENTERAXIS1=21 48; CENTERAXIS2=12 08	POS TARG null,-50 Sequence 4-4 Non-Int in Visit 02	73 Secs X 19 (1387 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)]	[3]

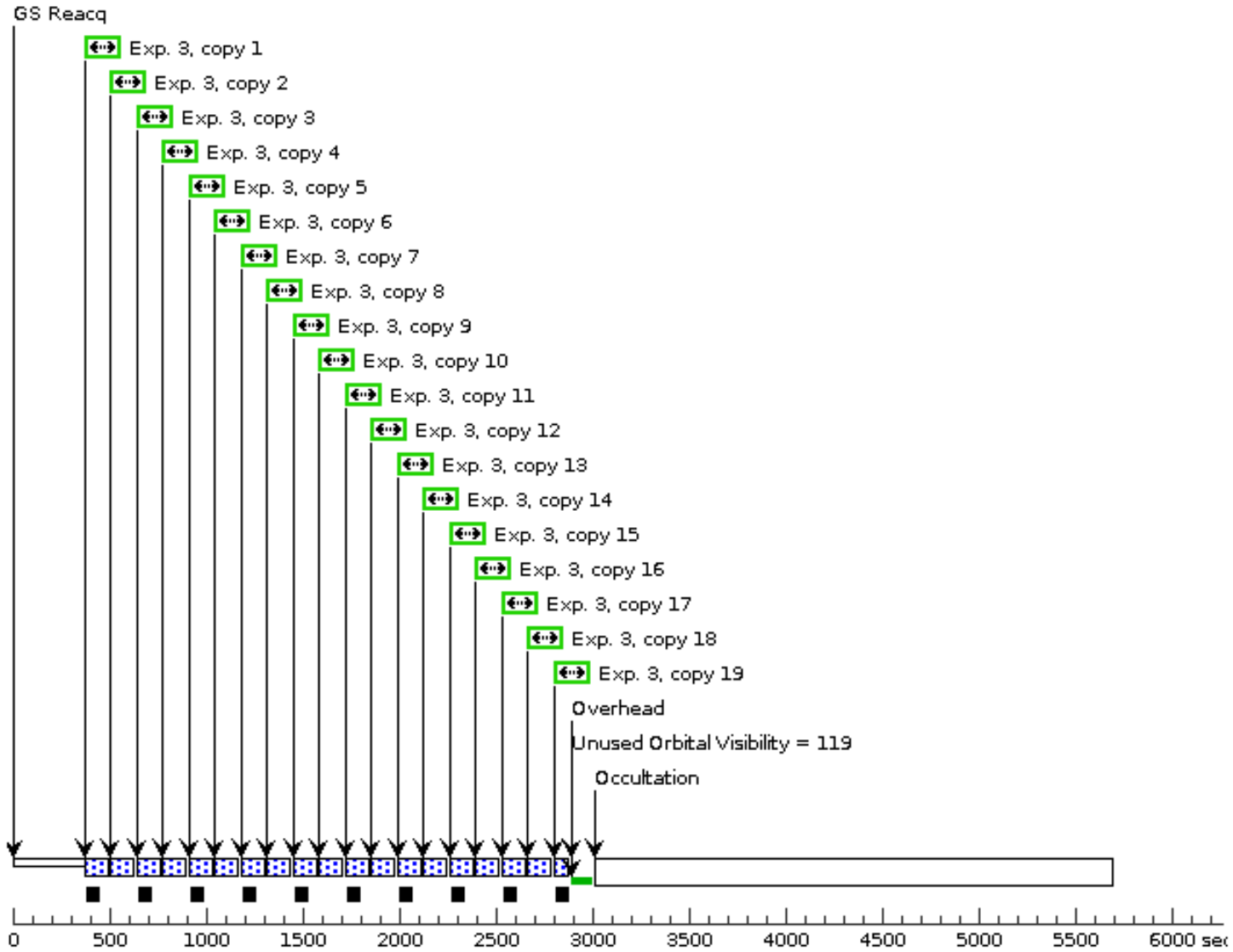
Proposal 17418 - Visit 02 - Upon Reflection: Unveiling a Cloud Transition with a High-Precision Reflected Light Spectrum

5	(WFC3UVI (1) WASP-69 S.sp.188960 7)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS1=2150; SIZEAXIS2=450; CENTERAXIS1=21 48; CENTERAXIS2=12 08	POS TARG null,-50 Sequence 5-5 Non-Int in Visit 02	73 Secs X 19 (1387 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)]	[4]
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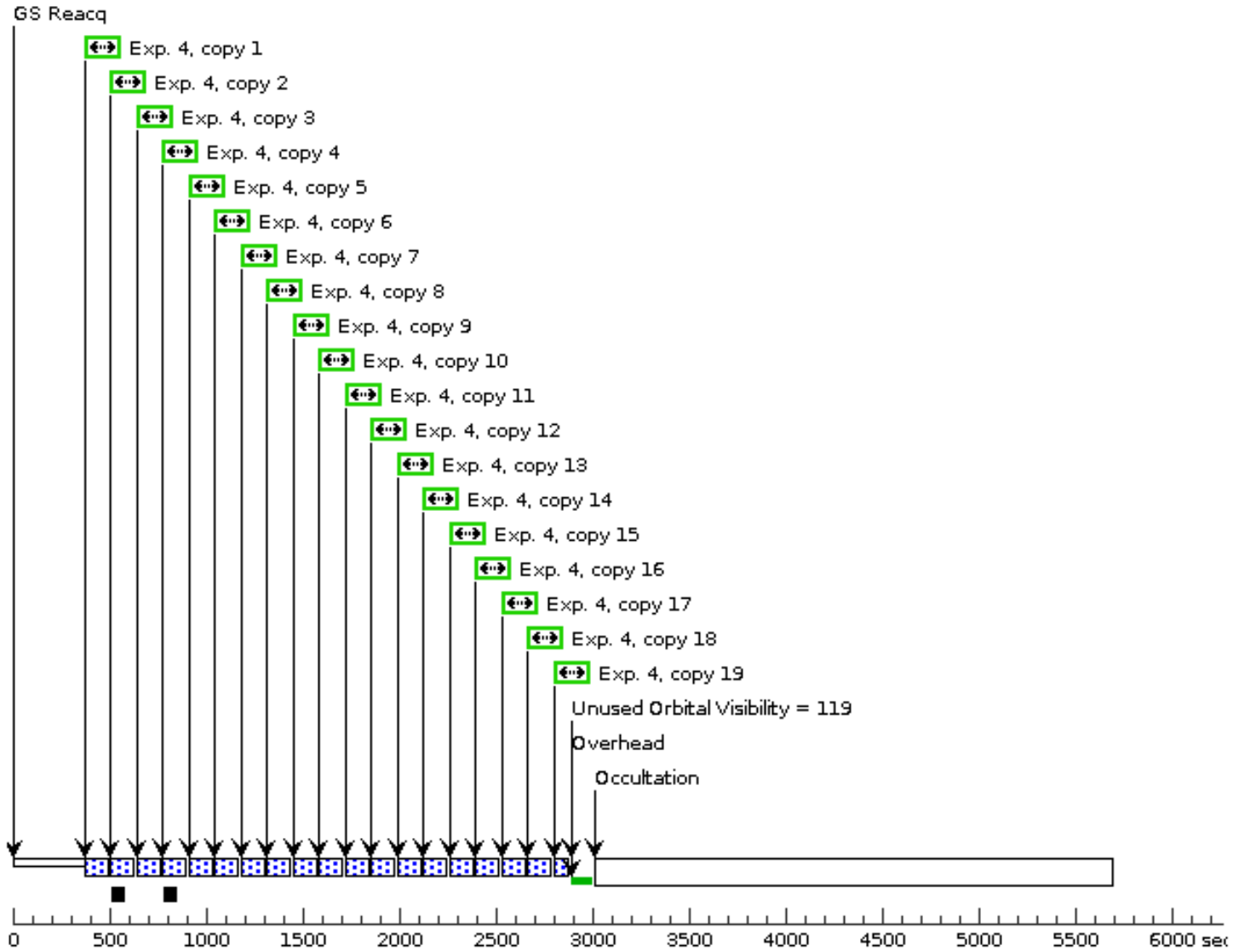
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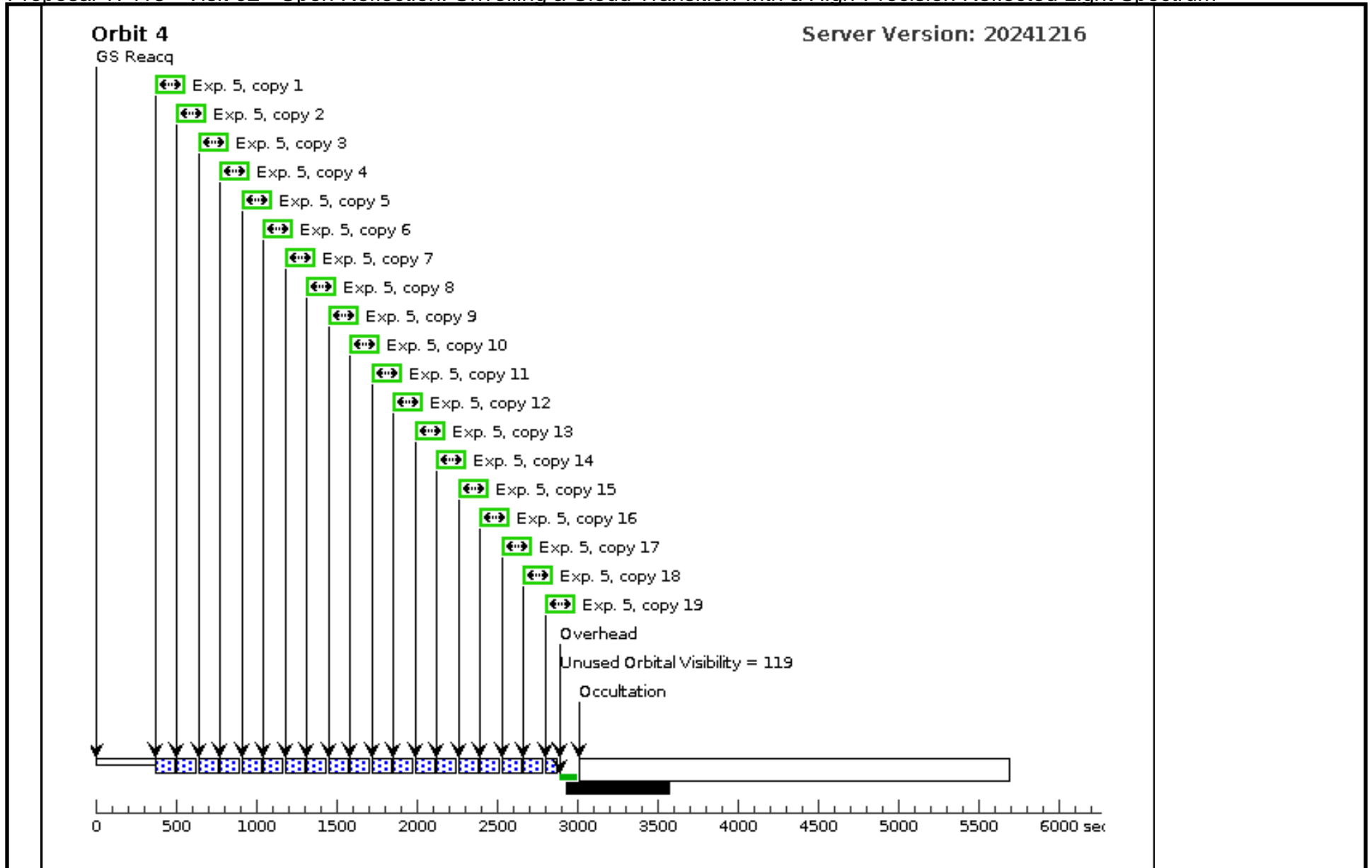
Server Version: 20241216



**Orbit 3**

Server Version: 20241216





# Proposal 17418 - Visit 03 - Upon Reflection: Unveiling a Cloud Transition with a High-Precision Reflected Light Spectrum

Tue Feb 11 17:00:31 GMT 2025

<b>Visit</b>	<b>Proposal 17418, Visit 03, scheduling</b> <b>Diagnostic Status: Warning</b> Scientific Instruments: WFC3/UVIS Special Requirements: Period 3.86814 D AND ZERO-PHASE HJD2457176.17789																	
<b>Diagnostics</b>	(Exposure 1 (Sequence 1-2 Non-Int in Visit 03)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser (Exposure 2 (Sequence 1-2 Non-Int in Visit 03)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser (Exposure 3 (Sequence 3-3 Non-Int in Visit 03)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser (Exposure 4 (Sequence 4-4 Non-Int in Visit 03)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser (Exposure 5 (Sequence 5-5 Non-Int in Visit 03)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser																	
<b>Fixed Targets</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td>WASP-69</td> <td>RA: 21 00 6.2319 (315.0259663d) Dec: -05 05 41.49 (-5.09486d) Equinox: J2000</td> <td>Proper Motion RA: 0.0022539720183223475 sec of time/yr Proper Motion Dec: -0.09343599992917007 arcsec/yr Epoch of Position: 2015.5</td> <td>V=9.87</td> <td>Reference Frame: SIMBAD</td> </tr> </tbody> </table> <p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>                  Category=STAR                  Description=[EXTRA-SOLAR PLANET, EXTRA-SOLAR PLANETARY SYSTEM, K III-I]                  Extended=NO</p>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(1)	WASP-69	RA: 21 00 6.2319 (315.0259663d) Dec: -05 05 41.49 (-5.09486d) Equinox: J2000	Proper Motion RA: 0.0022539720183223475 sec of time/yr Proper Motion Dec: -0.09343599992917007 arcsec/yr Epoch of Position: 2015.5	V=9.87	Reference Frame: SIMBAD					
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(1)	WASP-69	RA: 21 00 6.2319 (315.0259663d) Dec: -05 05 41.49 (-5.09486d) Equinox: J2000	Proper Motion RA: 0.0022539720183223475 sec of time/yr Proper Motion Dec: -0.09343599992917007 arcsec/yr Epoch of Position: 2015.5	V=9.87	Reference Frame: SIMBAD													

Proposal 17418 - Visit 03 - Upon Reflection: Unveiling a Cloud Transition with a High-Precision Reflected Light Spectrum

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(WFC3UVI S.im.188960 6)	(1) WASP-69	WFC3/UVIS, ACCUM, UVIS	F300X	SIZEAXIS1=2150; SIZEAXIS2=450; CENTERAXIS1=21 48; CENTERAXIS2=12 08	POS TARG null,-50; PHASE 0.46804378 56150214 TO 0.4716 3437150097404	Sequence 1-2 Non-In t in Visit 03	18 Secs (18 Secs)	[1]
								[==>]	
2	(WFC3UVI S.sp.188960 7)	(1) WASP-69	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS1=2150; SIZEAXIS2=450; CENTERAXIS1=21 48; CENTERAXIS2=12 08	POS TARG null,-50	Sequence 1-2 Non-In t in Visit 03	73 Secs X 19 (1387 Secs)	[1]
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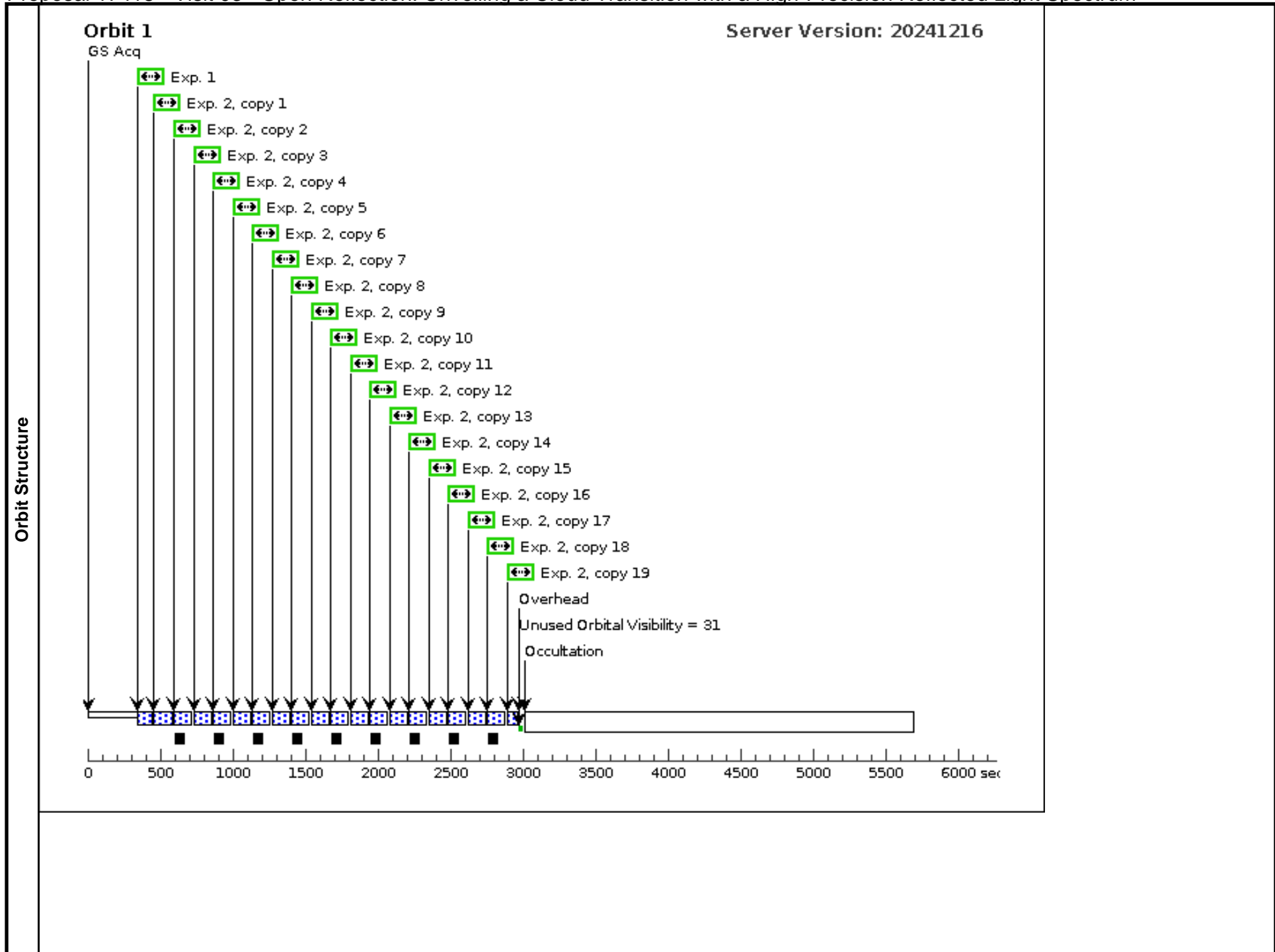
Exposures

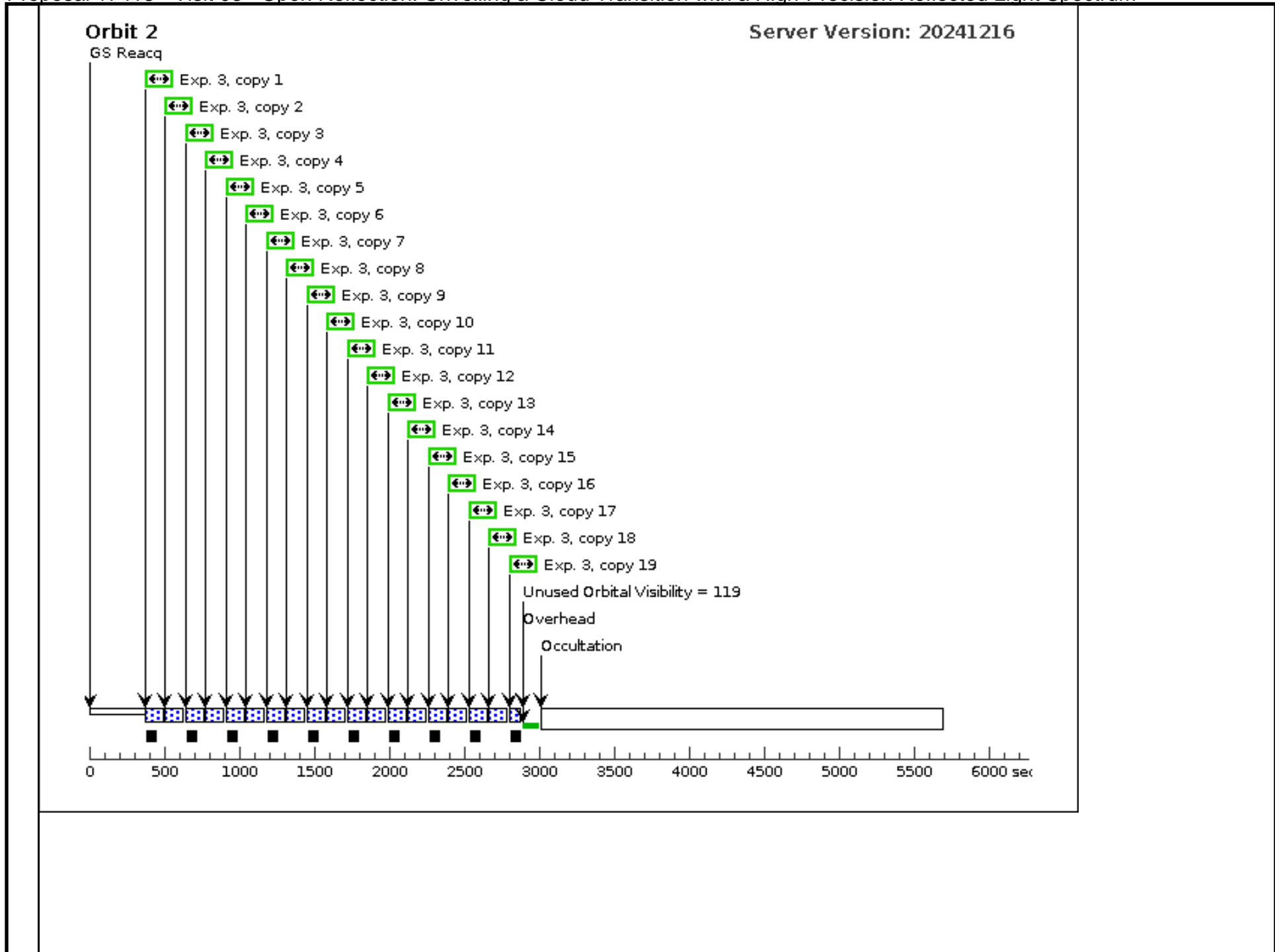
Proposal 17418 - Visit 03 - Upon Reflection: Unveiling a Cloud Transition with a High-Precision Reflected Light Spectrum

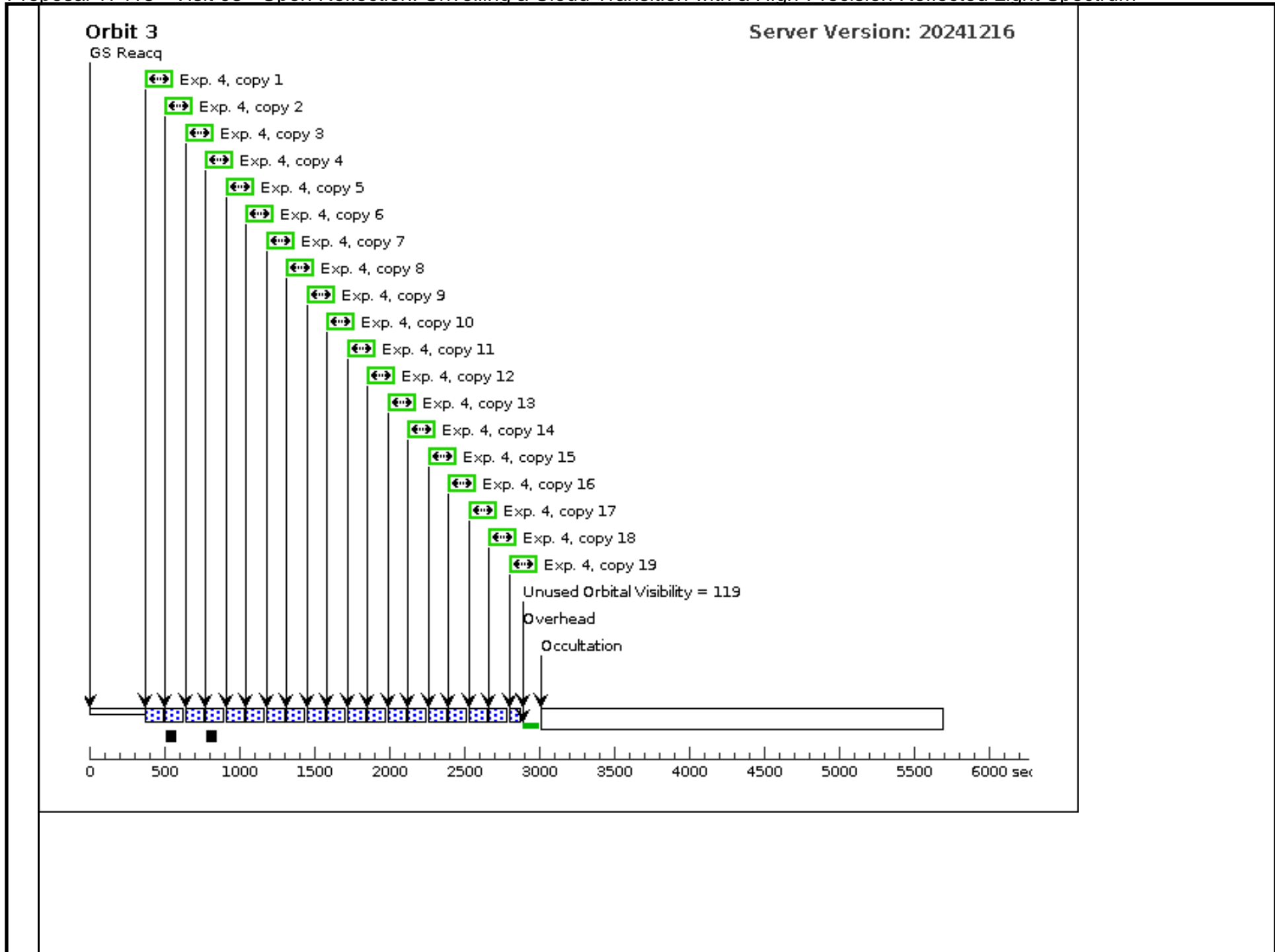
3	(WFC3UVI (1) WASP-69 S.sp.188960 7)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS1=2150; SIZEAXIS2=450; CENTERAXIS1=21 48; CENTERAXIS2=12 08	POS TARG null,-50 Sequence 3-3 Non-Int in Visit 03	73 Secs X 19 (1387 Secs)	[==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)] [==>(Copy 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)]	[2]
4	(WFC3UVI (1) WASP-69 S.sp.188960 7)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS1=2150; SIZEAXIS2=450; CENTERAXIS1=21 48; CENTERAXIS2=12 08	POS TARG null,-50 Sequence 4-4 Non-Int in Visit 03	73 Secs X 19 (1387 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)]	[3]

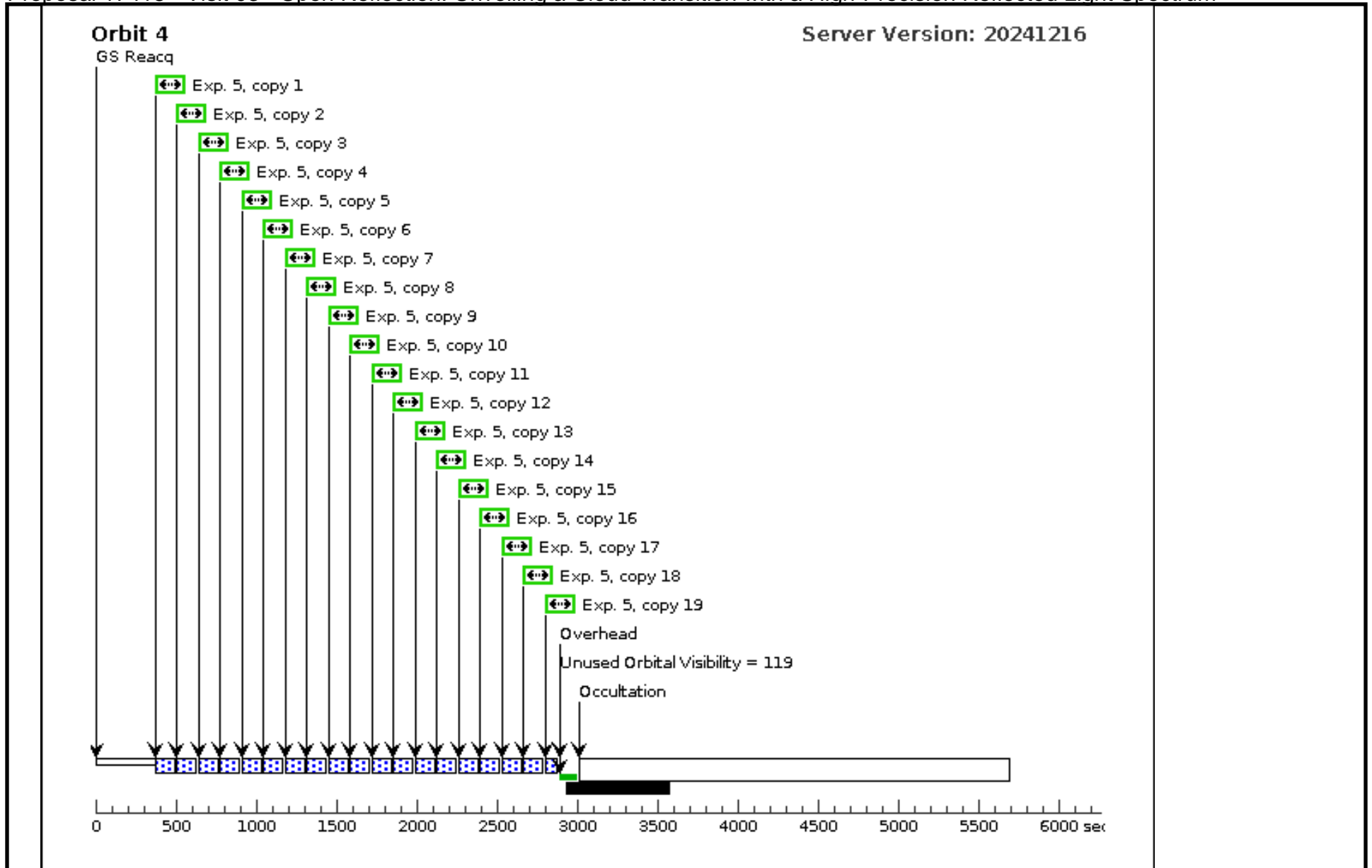
Proposal 17418 - Visit 03 - Upon Reflection: Unveiling a Cloud Transition with a High-Precision Reflected Light Spectrum

5	(WFC3UVI (1) WASP-69 S.sp.188960 7)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS1=2150; SIZEAXIS2=450; CENTERAXIS1=21 48; CENTERAXIS2=12 08	POS TARG null,-50 Sequence 5-5 Non-Int in Visit 03	73 Secs X 19 (1387 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)]	[4]
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# Proposal 17418 - Visit 04 - Upon Reflection: Unveiling a Cloud Transition with a High-Precision Reflected Light Spectrum

Tue Feb 11 17:00:31 GMT 2025

<b>Visit</b>	<b>Proposal 17418, Visit 04, scheduling</b> <b>Diagnostic Status: Warning</b> Scientific Instruments: WFC3/UVIS Special Requirements: Period 3.86814 D AND ZERO-PHASE HJD2457176.17789																	
<b>Diagnostics</b>	(Exposure 1 (Sequence 1-2 Non-Int in Visit 04)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser (Exposure 2 (Sequence 1-2 Non-Int in Visit 04)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser (Exposure 3 (Sequence 3-3 Non-Int in Visit 04)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser (Exposure 4 (Sequence 4-4 Non-Int in Visit 04)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser (Exposure 5 (Sequence 5-5 Non-Int in Visit 04)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser																	
<b>Fixed Targets</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td>WASP-69</td> <td>RA: 21 00 6.2319 (315.0259663d) Dec: -05 05 41.49 (-5.09486d) Equinox: J2000</td> <td>Proper Motion RA: 0.0022539720183223475 sec of time/yr Proper Motion Dec: -0.09343599992917007 arcsec/yr Epoch of Position: 2015.5</td> <td>V=9.87</td> <td>Reference Frame: SIMBAD</td> </tr> </tbody> </table> <p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>                  Category=STAR                  Description=[EXTRA-SOLAR PLANET, EXTRA-SOLAR PLANETARY SYSTEM, K III-I]                  Extended=NO</p>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(1)	WASP-69	RA: 21 00 6.2319 (315.0259663d) Dec: -05 05 41.49 (-5.09486d) Equinox: J2000	Proper Motion RA: 0.0022539720183223475 sec of time/yr Proper Motion Dec: -0.09343599992917007 arcsec/yr Epoch of Position: 2015.5	V=9.87	Reference Frame: SIMBAD					
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous													
(1)	WASP-69	RA: 21 00 6.2319 (315.0259663d) Dec: -05 05 41.49 (-5.09486d) Equinox: J2000	Proper Motion RA: 0.0022539720183223475 sec of time/yr Proper Motion Dec: -0.09343599992917007 arcsec/yr Epoch of Position: 2015.5	V=9.87	Reference Frame: SIMBAD													

Proposal 17418 - Visit 04 - Upon Reflection: Unveiling a Cloud Transition with a High-Precision Reflected Light Spectrum

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(WFC3UVI S.im.188960 6)	(1) WASP-69	WFC3/UVIS, ACCUM, UVIS	F300X	SIZEAXIS1=2150; SIZEAXIS2=450; CENTERAXIS1=2148; CENTERAXIS2=1208	POS TARG null,-50; PHASE 0.46804378 56150214 TO 0.4716 3437150097404	Sequence 1-2 Non-Int in Visit 04	18 Secs (18 Secs) [==>]	[1]
2	(WFC3UVI S.sp.188960 7)	(1) WASP-69	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS1=2150; SIZEAXIS2=450; CENTERAXIS1=2148; CENTERAXIS2=1208	POS TARG null,-50	Sequence 1-2 Non-Int in Visit 04	73 Secs X 19 (1387 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]

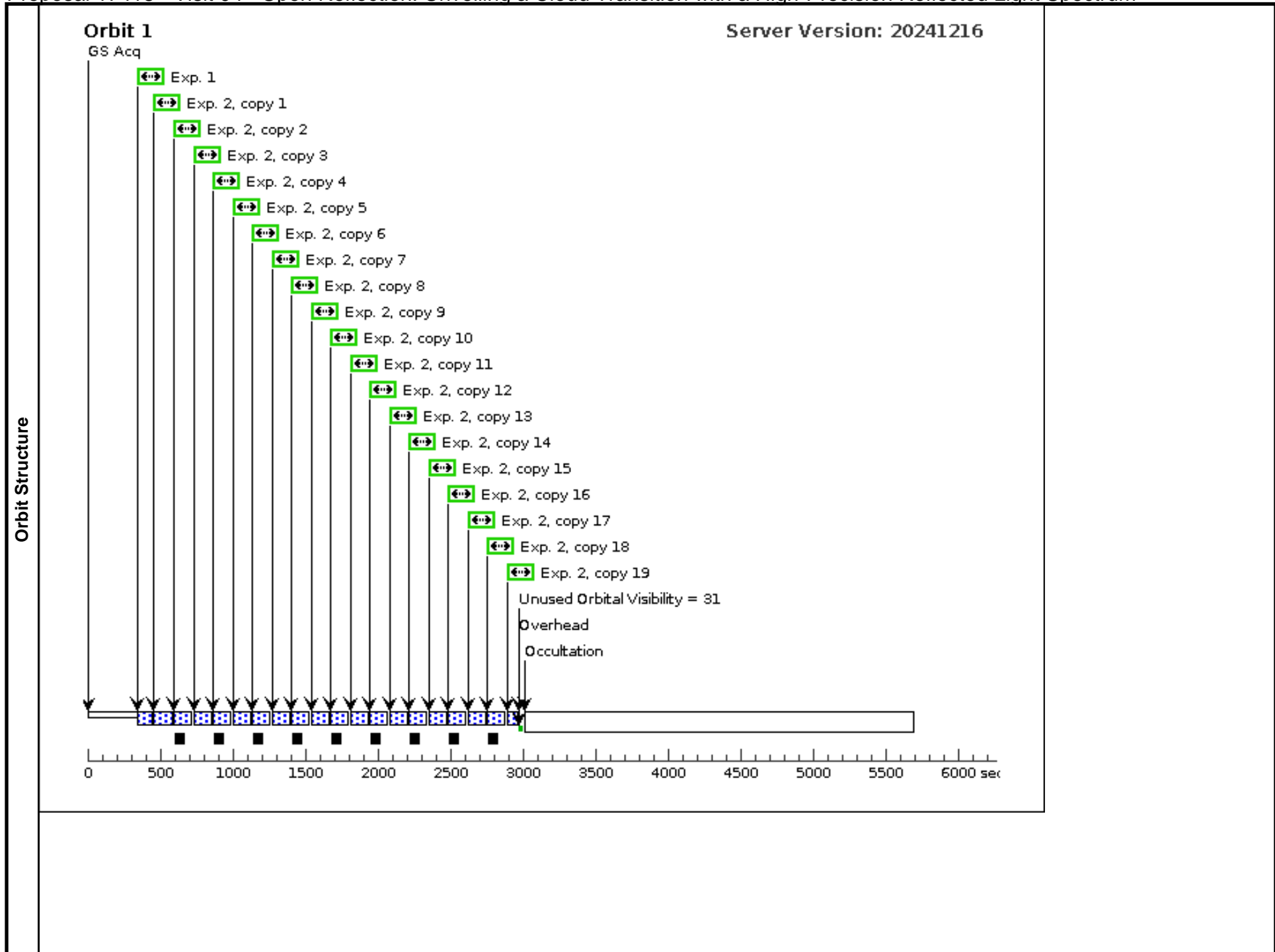
Exposures

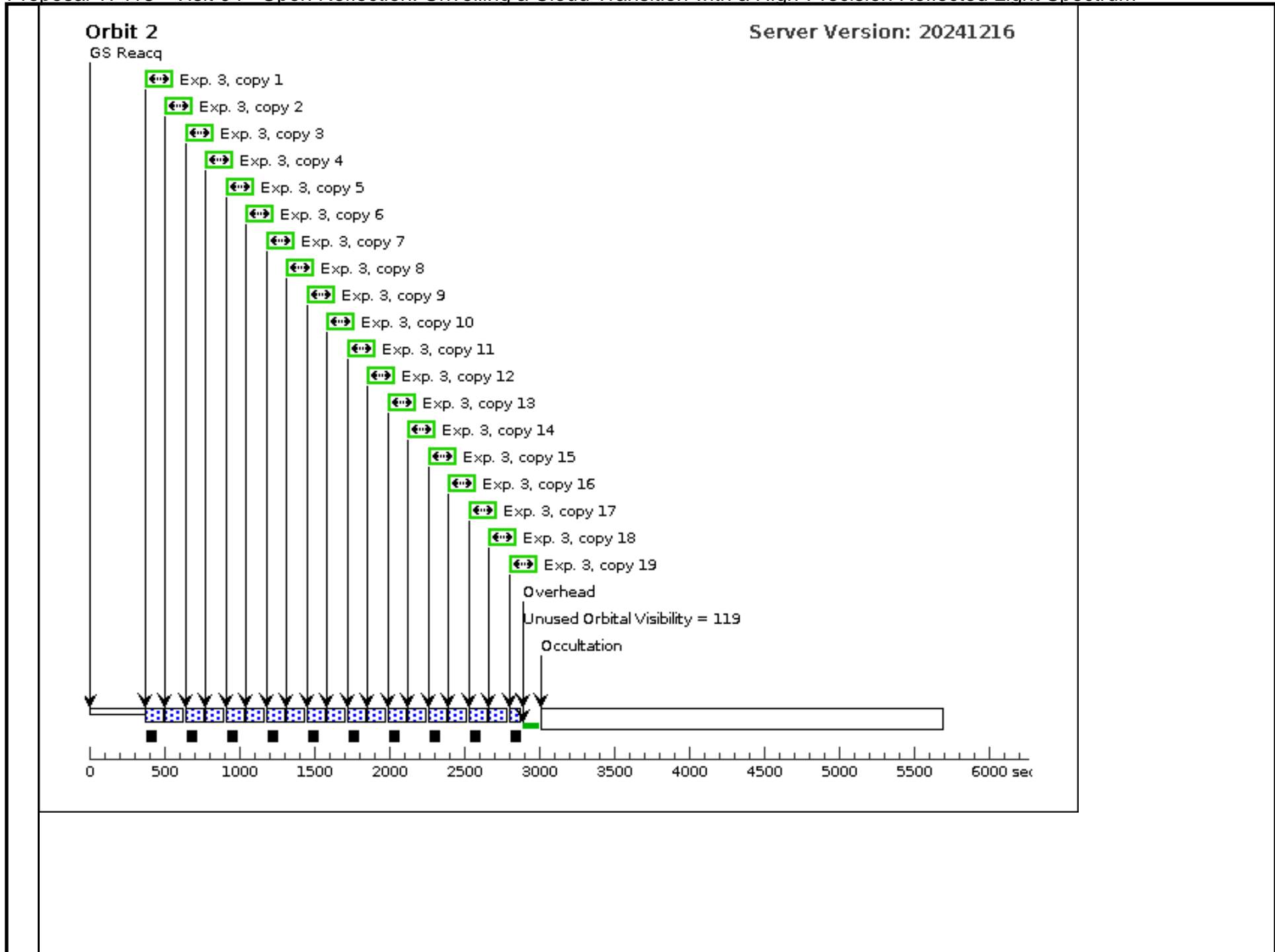
Proposal 17418 - Visit 04 - Upon Reflection: Unveiling a Cloud Transition with a High-Precision Reflected Light Spectrum

3	(WFC3UVI (1) WASP-69 S.sp.188960 7)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS1=2150; SIZEAXIS2=450; CENTERAXIS1=2148; CENTERAXIS2=1208	POS TARG null,-50	Sequence 3-3 Non-Int in Visit 04	73 Secs X 19 (1387 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)]	[2]
4	(WFC3UVI (1) WASP-69 S.sp.188960 7)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS1=2150; SIZEAXIS2=450; CENTERAXIS1=2148; CENTERAXIS2=1208	POS TARG null,-50	Sequence 4-4 Non-Int in Visit 04	73 Secs X 19 (1387 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)]	[3]

Proposal 17418 - Visit 04 - Upon Reflection: Unveiling a Cloud Transition with a High-Precision Reflected Light Spectrum

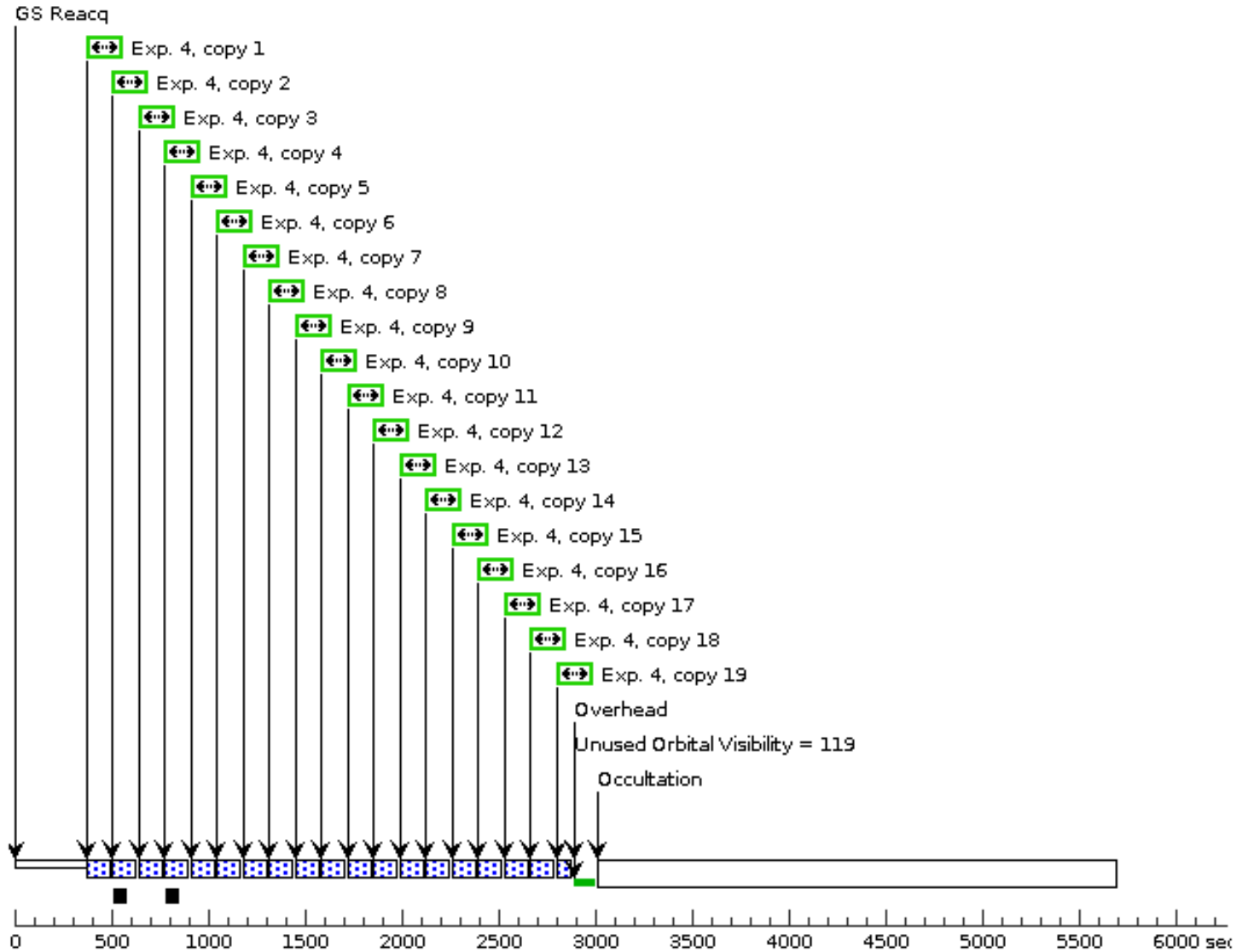
5	(WFC3UVI (1) WASP-69 S.sp.188960 7)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS1=2150; SIZEAXIS2=450; CENTERAXIS1=21 48; CENTERAXIS2=12 08	POS TARG null,-50 Sequence 5-5 Non-In t in Visit 04	73 Secs X 19 (1387 Secs) [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)] [==>(Copy 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)]	[4]
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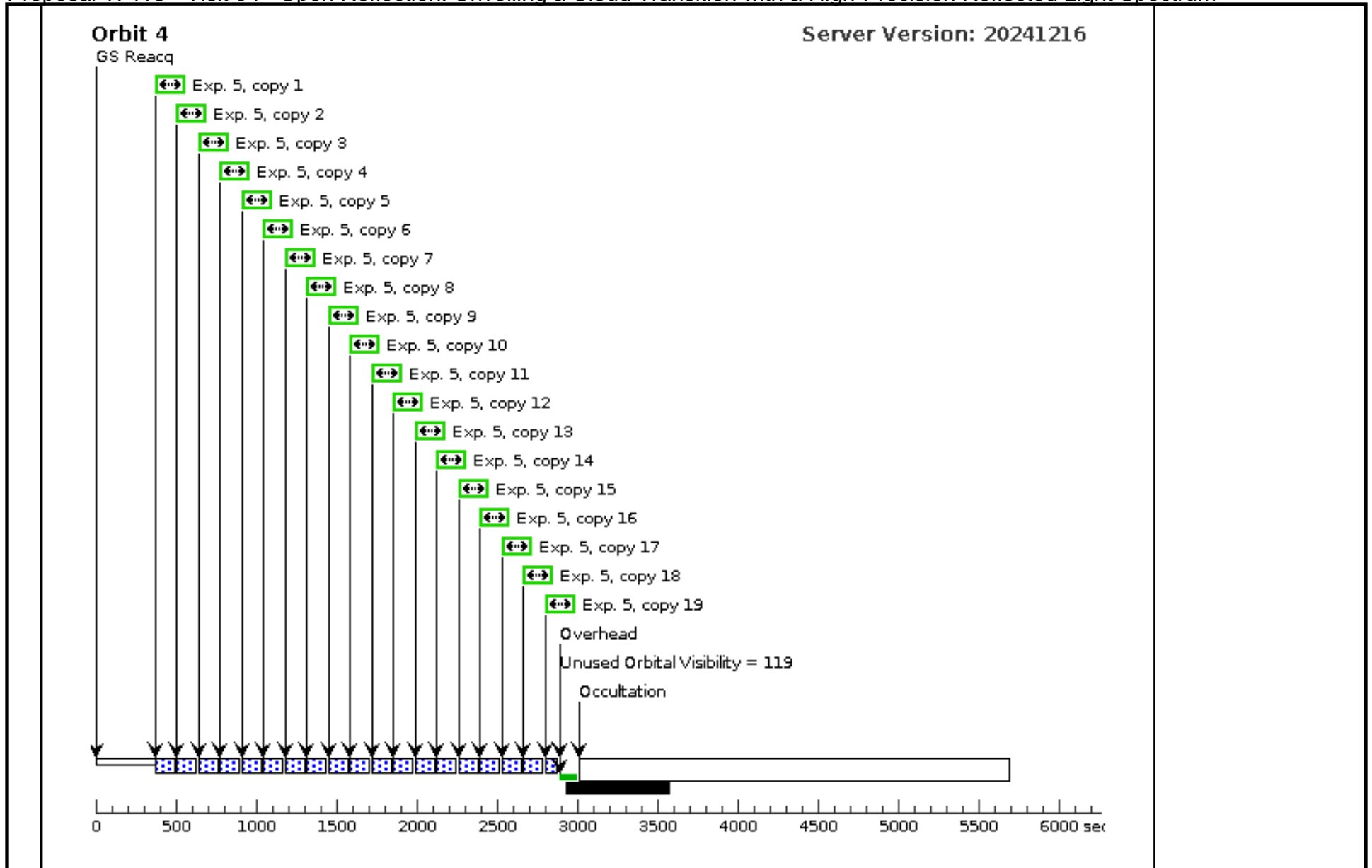




**Orbit 3**

Server Version: 20241216





# Proposal 17418 - Visit 05 - Upon Reflection: Unveiling a Cloud Transition with a High-Precision Reflected Light Spectrum

Tue Feb 11 17:00:31 GMT 2025

<b>Visit</b>	<b>Proposal 17418, Visit 05, scheduling</b> <b>Diagnostic Status: Warning</b> Scientific Instruments: WFC3/UVIS Special Requirements: Period 3.86814 D AND ZERO-PHASE HJD2457176.17789												
<b>Diagnostics</b>	(Exposure 1 (Sequence 1-2 Non-Int in Visit 05)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser (Exposure 2 (Sequence 1-2 Non-Int in Visit 05)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser (Exposure 3 (Sequence 3-3 Non-Int in Visit 05)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser (Exposure 4 (Sequence 4-4 Non-Int in Visit 05)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser (Exposure 5 (Sequence 5-5 Non-Int in Visit 05)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser												
<b>Fixed Targets</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td>WASP-69</td> <td>                     RA: 21 00 6.2319 (315.0259663d)                      Dec: -05 05 41.49 (-5.09486d)                      Equinox: J2000                 </td> <td>                     Proper Motion RA: 0.0022539720183223475                      sec of time/yr                      Proper Motion Dec: -0.09343599992917007                      arcsec/yr                      Epoch of Position: 2015.5                 </td> <td>V=9.87</td> <td>Reference Frame: SIMBAD</td> </tr> </tbody> </table> <p> <i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>                      Category=STAR                      Description=[EXTRA-SOLAR PLANET, EXTRA-SOLAR PLANETARY SYSTEM, K III-I]                      Extended=NO                 </p>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(1)	WASP-69	RA: 21 00 6.2319 (315.0259663d) Dec: -05 05 41.49 (-5.09486d) Equinox: J2000	Proper Motion RA: 0.0022539720183223475 sec of time/yr Proper Motion Dec: -0.09343599992917007 arcsec/yr Epoch of Position: 2015.5	V=9.87	Reference Frame: SIMBAD
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous								
(1)	WASP-69	RA: 21 00 6.2319 (315.0259663d) Dec: -05 05 41.49 (-5.09486d) Equinox: J2000	Proper Motion RA: 0.0022539720183223475 sec of time/yr Proper Motion Dec: -0.09343599992917007 arcsec/yr Epoch of Position: 2015.5	V=9.87	Reference Frame: SIMBAD								

Proposal 17418 - Visit 05 - Upon Reflection: Unveiling a Cloud Transition with a High-Precision Reflected Light Spectrum

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(WFC3UVI S.im.188960 6)	(1) WASP-69	WFC3/UVIS, ACCUM, UVIS	F300X	SIZEAXIS1=2150; SIZEAXIS2=450; CENTERAXIS1=21 48; CENTERAXIS2=12 08	POS TARG null,-50; PHASE 0.46804378 56150214 TO 0.4716 3437150097404	Sequence 1-2 Non-In t in Visit 05	18 Secs (18 Secs)	[1]
								[==>]	
2	(WFC3UVI S.sp.188960 7)	(1) WASP-69	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS1=2150; SIZEAXIS2=450; CENTERAXIS1=21 48; CENTERAXIS2=12 08	POS TARG null,-50	Sequence 1-2 Non-In t in Visit 05	73 Secs X 19 (1387 Secs)	[1]
								[==>(Copy 1)]	
								[==>(Copy 2)]	
								[==>(Copy 3)]	
								[==>(Copy 4)]	
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Exposures

Proposal 17418 - Visit 05 - Upon Reflection: Unveiling a Cloud Transition with a High-Precision Reflected Light Spectrum

3	(WFC3UVI (1) WASP-69 S.sp.188960 7)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS1=2150; SIZEAXIS2=450; CENTERAXIS1=21 48; CENTERAXIS2=12 08	POS TARG null,-50 Sequence 3-3 Non-Int in Visit 05	73 Secs X 19 (1387 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)]	[2]
4	(WFC3UVI (1) WASP-69 S.sp.188960 7)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS1=2150; SIZEAXIS2=450; CENTERAXIS1=21 48; CENTERAXIS2=12 08	POS TARG null,-50 Sequence 4-4 Non-Int in Visit 05	73 Secs X 19 (1387 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)]	[3]

Proposal 17418 - Visit 05 - Upon Reflection: Unveiling a Cloud Transition with a High-Precision Reflected Light Spectrum

5	(WFC3UVI (1) WASP-69 S.sp.188960 7)	WFC3/UVIS, ACCUM, UVIS	G280	SIZEAXIS1=2150; SIZEAXIS2=450; CENTERAXIS1=21 48; CENTERAXIS2=12 08	POS TARG null,-50 Sequence 5-5 Non-Int in Visit 05	73 Secs X 19 (1387 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)]	[4]
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