15285 - Instabilities and Turbulence in a Cygnus Loop Shock Front

Cycle: 25, Proposal Category: GO

(UV Initiative)

(Availability Mode: SUPPORTED)

INVESTIGATORS

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VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(3) CYGNUS-LOOP-WFC3	WFC3/UVIS	3	19-Jul-2017 17:06:14.0	yes
02	(7) CYGNUS-LOOP-S2 (9) CYGNUS-LOOP-S3	WFC3/UVIS	2	19-Jul-2017 17:06:16.0	yes
03	(1) CYGNUS-LOOP-STIS (10) GSC0268701014 ANY	STIS/CCD STIS/FUV-MAMA STIS/NUV-MAMA WFC3/UVIS	3	19-Jul-2017 17:06:19.0	yes
04	(1) CYGNUS-LOOP-STIS (10) GSC0268701014 ANY CCDFLAT	STIS/CCD WFC3/UVIS	3	19-Jul-2017 17:06:22.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
05	(4) CYGNUS-LOOP-Q1 (5) CYGNUS-LOOP-Q2	WFC3/UVIS	2	19-Jul-2017 17:06:23.0	yes
06	(4) CYGNUS-LOOP-Q1 (5) CYGNUS-LOOP-Q2	WFC3/UVIS	2	19-Jul-2017 17:06:24.0	yes

15 Total Orbits Used

ABSTRACT

The [O III] emission in old supernova remnants takes the form of long, crisp filaments, while the H alpha and [S II] emission is frothy and clumpy. That indicates that instabilities in cooling gas behind the shock produce strong turbulence. This very rapid generation of turbulence is not considered in the picture of global turbulence in the ISM, and it amplifies magnetic fields and boosts the energy of cosmic rays. It can also affect the overall emission spectrum of the shocked gas in ways not considered in the 1D models used to interpret spectra of SNRs, HH objects and AGN. We propose to quantify and understand the mechanism for generating turbulence by obtaining narrow band WFC3 images and STIS UV and optical spectra to complement an existing Heritage mosaic of WFC3 images of the western Cygnus Loop (Veil Nebula). This is a unique opportunity to fully characterize the post-shock flow in a supernova remnant shock because the Cygnus Loop is nearby and nearly unreddened. It is crucial both for the understanding of turbulence and for interpreting the spectra of unresolved shocks in more distant SNRs, in AGN and in HH objects.

OBSERVING DESCRIPTION

The program will observe extended emission from the Cygnus Loop supernova remnant in a region previously covered by a Hubble Heritage mosaic of H alpha, [O III] and [S II] images. It includes 9 orbits of WFC3 imaging and 6 orbits of STIS spectroscopy. We ask for WFC3 images in parallel with the spectroscopy. These parallel images fall on another part of the Heritage image but use different filters.

The program includes full images in H alpha (narrow), [O I] and [O II], and quad images in each of the [S II] lines, [O III] 4363 and [Ne IV] 2425. The spectra will be low resolution spectra in FUV, NUV, red and blue optical, plus higher resolution red and blue optical spectra.

Seven of the imaging orbits are ~2700 seconds of exposure for the full orbit. Four of those use Quad filters, and the other three use regular filters. The closer they are to the same orientation, the better, but this is not critical within the ORIENT window given in the proposal.

Six of the orbits use STIS in the long slit (52") mode, although different slit widths are used as needed to improve S/N. It is important to have the SAME ORIENT for all STIS observations in order to cover the same field of view, but that value can be anywhere within the ORIENT range given in the proposal.

The aim of the proposal is to study the development of turbulence in the cooling gas behind the shock front. The [O III] morphology is much different than the H alpha and [S II] morphology. The new images will add density and temperature information, along with images in higher and lower ionization states, to the Heritage images. The spectra will provide velocity centroids in high and low ionization lines, along with diagnostics for peak temperature and elemental abundances (grain destruction and cooling rates). We hope to be able to discriminate among the possible causes for the clumpy structure at low temperatures; cooling instabilities, the thin shell instability or pre-existing density inhomogeneities, and to elucidate the role of magnetic fields.

The plan is

	Target	Inst	Element	Parallel Exposures
Visit 1				
	WFC3-1	WFC3	F631N	
	WFC3-1	WFC3	F373N	
	WFC3-1	WFC3	F656N	
Visit 2				
	SII-2	WFC3	FQ672N, FQ674N	
	SII-4	WFC3	FQ672N, FQ674N	
Visit 3				
	Offset star			
	STIS-1	STIS	G140L	WFC3 F631N
	STIS-1	STIS	G230L	WFC3 F373N
	STIS-1	STIS	G430L	WFC3 F656N
Visit 4				
	Offset star			
	STIS-1	STIS	G750L	WFC3 FQ437N

	STIS-1	STIS	G430M	WFC3 FQ672N, FQ674N
	STIS-1	STIS	G750M	WFC3 FQ243N
Visit 5				
	QUAD-1	WFC3	FQ437N	
	QUAD-2	WFC3	FQ437N	
Visit 6				
	QUAD-1	WFC3	FQ243N	
	QUAD-2	WFC3	FQ243N	

Targets S2 and S4 are chosen so that we will get both filters covering 3 positions across the filaments. Both the FQ672N and FQ674N quadrants (amplifiers B and D) should be read out.for each exposure.

Visit

Proposal 15285, O I, O II, Ha (01) Wed Jul 19 21:06:26 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 15D TO 35 D; ORIENT 195D TO 220 D

Comments: Three orbits to do full size WFC3 images; using a 3-pattern with steps to cover the chip gap instead of CR-SPLIT.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=1.607 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=86.7 Angle Between Sides= Center Pattern=false		(1-3)

Fixed Targets

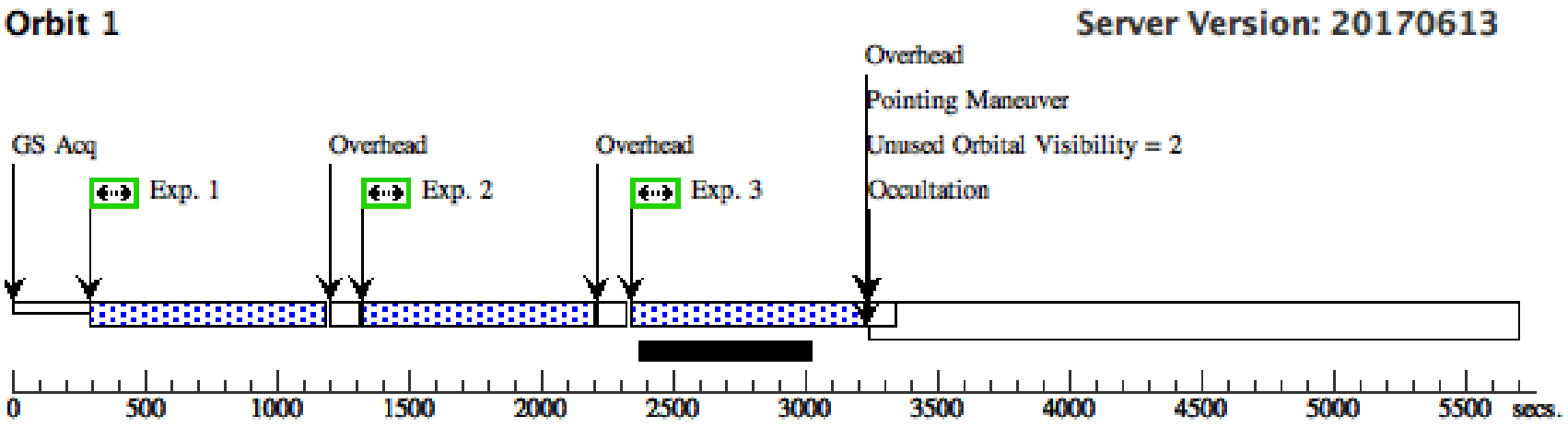
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	CYGNUS-LOOP-WFC3	RA: 20 45 41.5200 (311.4230000d) Dec: +30 59 39.86 (30.99441d) Equinox: J2000		V=25+/-1 O III 5007 flux is 0.0035 photon s/(cm2 s square arcsecond)	Reference Frame: ICRS

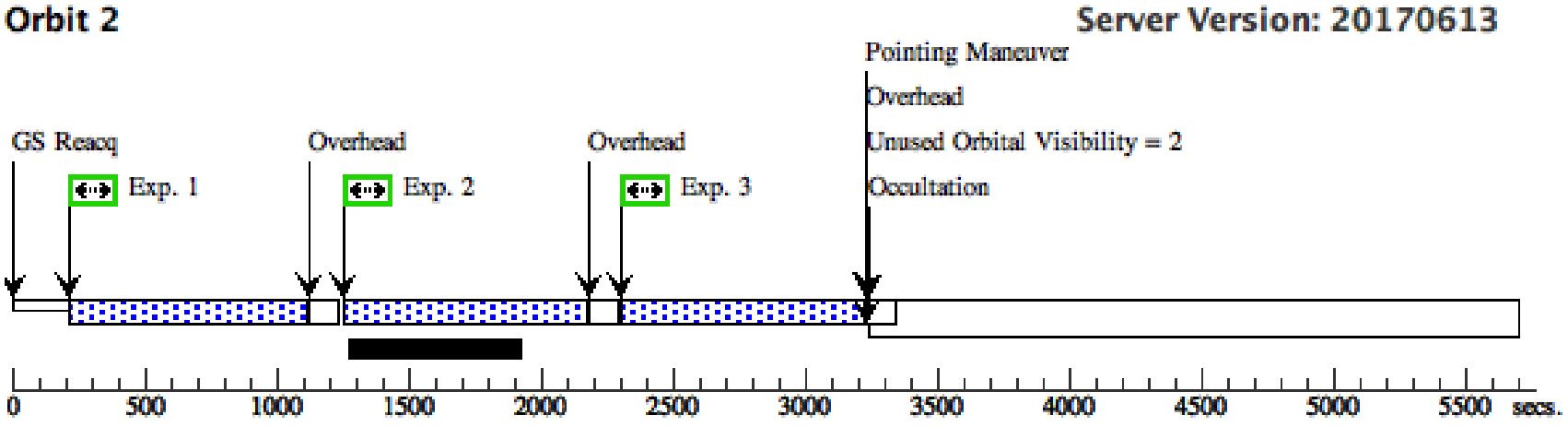
Comments: Extended=YES

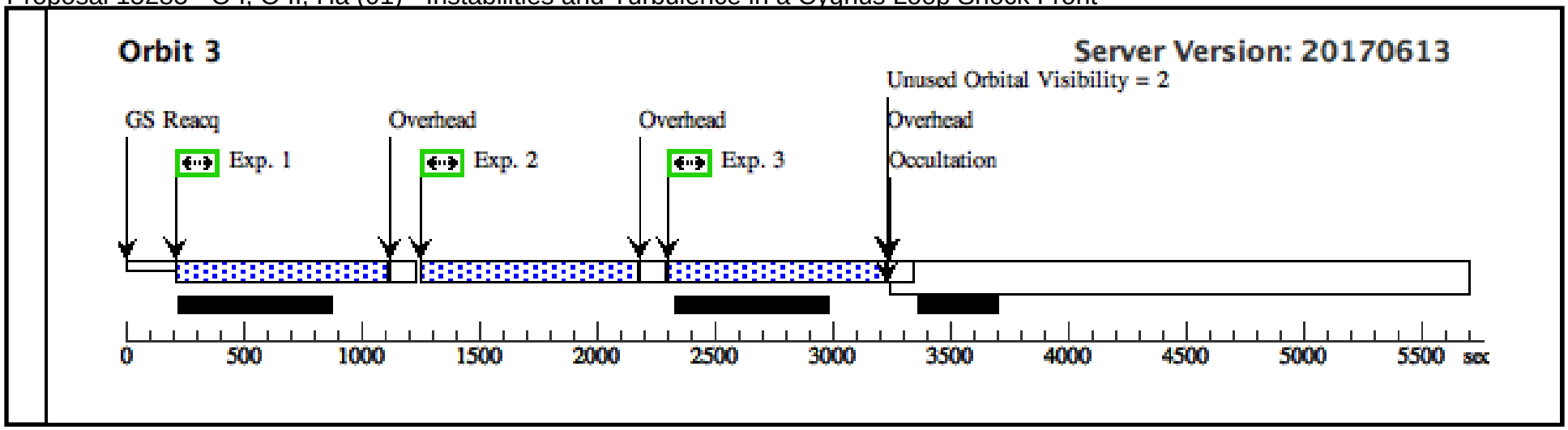
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	O I	(3) CYGNUS-LOOP-WFC3	WFC3/UVIS, ACCUM, UVIS-CENTER	F631N	FLASH=9		Pattern 1, Exps 1-3 in O I, O II, Ha (01) (1)	850 Secs (2660 Secs)	
								[==>862.0 Secs (Pattern 1)]	***[1]***
								[==>899.0 Secs (Pattern 2)]	***[2]***
								[==>899.0 Secs (Pattern 3)]	***[3]***
2	O II	(3) CYGNUS-LOOP-WFC3	WFC3/UVIS, ACCUM, UVIS-CENTER	F373N	FLASH=10		Pattern 1, Exps 1-3 in O I, O II, Ha (01) (1)	850 Secs (2660 Secs)	
								[==>862.0 Secs (Pattern 1)]	***[1]***
								[==>899.0 Secs (Pattern 2)]	***[2]***
								[==>899.0 Secs (Pattern 3)]	***[3]***
3	H alpha narrow	(3) CYGNUS-LOOP-WFC3	WFC3/UVIS, ACCUM, UVIS-CENTER	F656N	FLASH=10		Pattern 1, Exps 1-3 in O I, O II, Ha (01) (1)	850 Secs (2660 Secs)	
								[==>862.0 Secs (Pattern 1)]	***[1]***
								[==>899.0 Secs (Pattern 2)]	***[2]***
								[==>899.0 Secs (Pattern 3)]	***[3]***

Orbit Structure






Orbit 3
Server Version: 20170613
Unused Orbital Visibility = 2
GS Reacq
Overhead
Overhead
Overhead
Exp. 1
Exp. 2
Exp. 3
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15285, S II (02) Wed Jul 19 21:06:26 GMT 2017

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 15D TO 35 D; ORIENT 195D TO 220 D

Comments: 4 exposures in 2 orbits with the S II quad filters

Diagnostics

(Exposure 1 (Pattern 3, Exps 1-1 in S II (02))) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

(Exposure 2 (Pattern 3, Exps 2-2 in S II (02))) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

(Exposure3 - (SII-3) (02.003)) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

(Exposure 4, SII-3 (02.004)) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(3)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(1), (2), (3), (4)

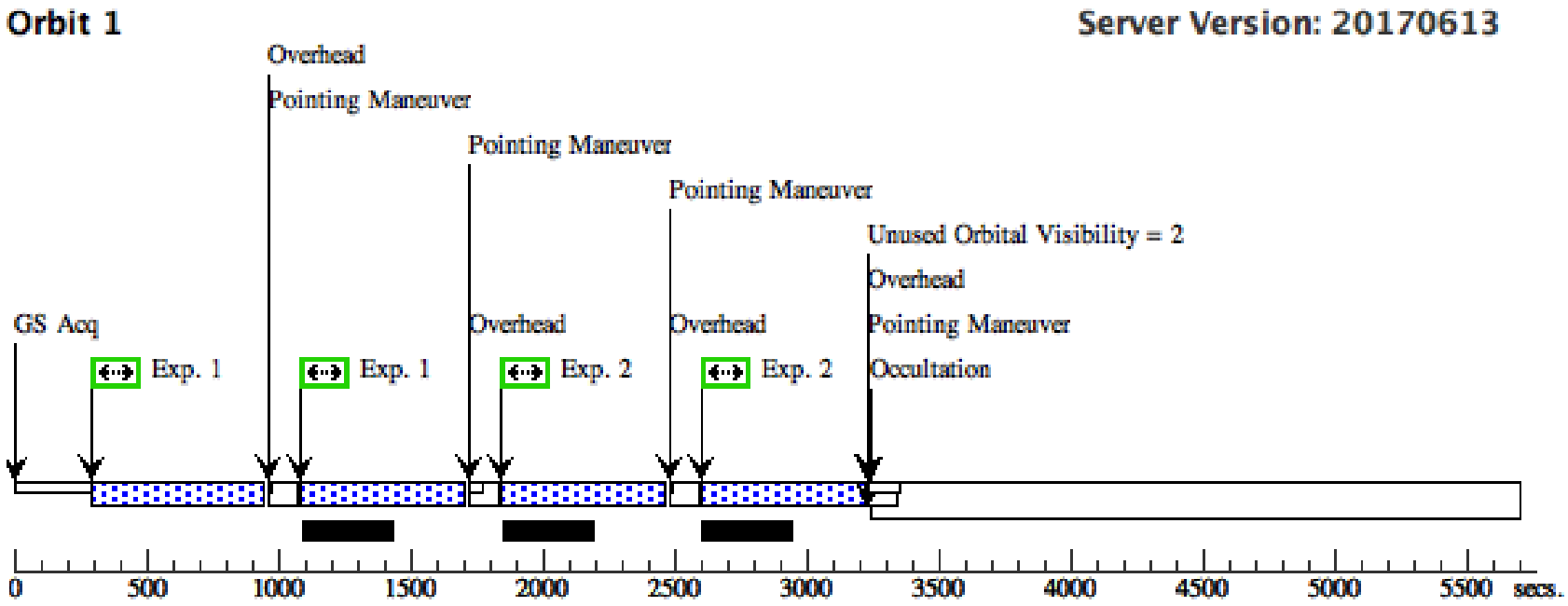
Fixed Targets

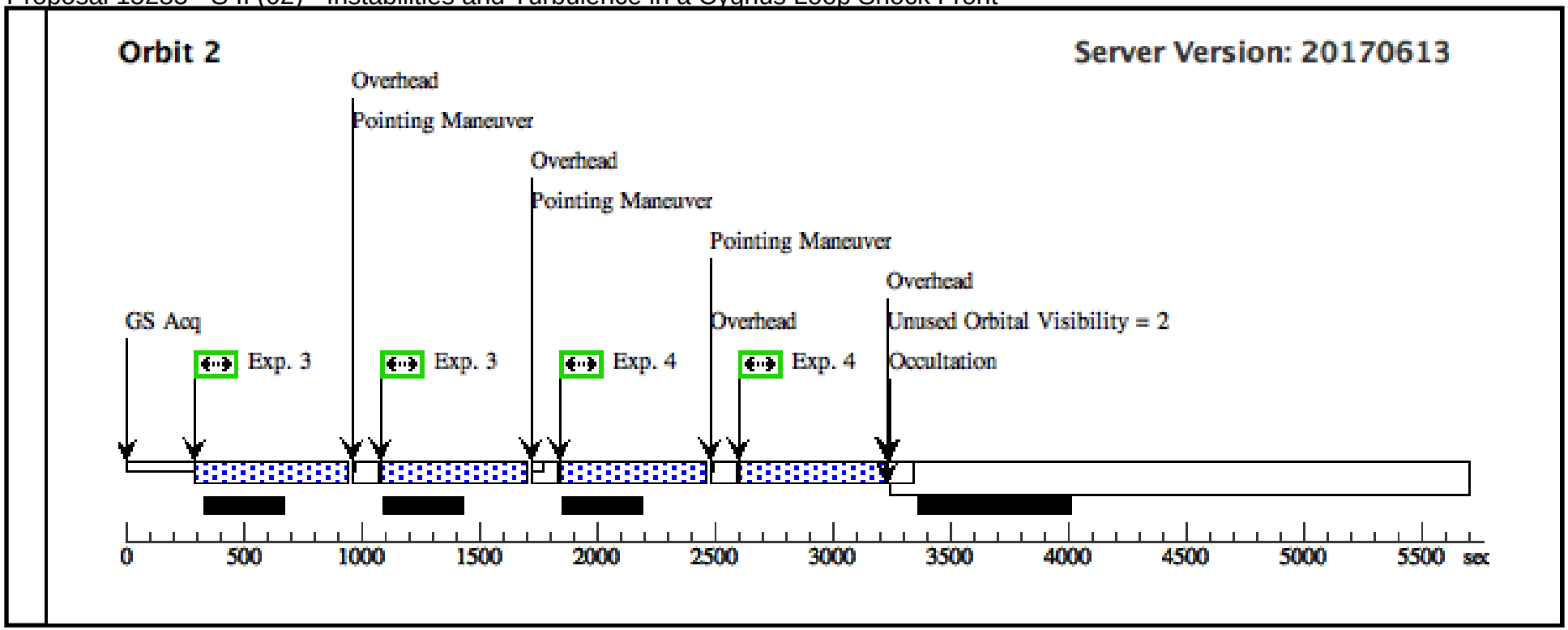
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(7)	CYGNUS-LOOP-S2	RA: 20 45 41.0180 (311.4209083d) Dec: +31 00 2.08 (31.00058d) Equinox: J2000		V=25+/-1 O III 5007 flux is 0.0035 photon s/(cm2 s square arcsecond)	Reference Frame: ICRS
Comments: Extended=YES					
(9)	CYGNUS-LOOP-S3	RA: 20 45 45.6511 (311.4402129d) Dec: +31 00 26.17 (31.00727d) Equinox: J2000		V=25+/-1 O III 5007 flux is 0.0035 photon s/(cm2 s square arcsecond)	Reference Frame: ICRS
Comments: Extended=YES					

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(7) CYGNUS-LOOP -S2	WFC3/UVIS, ACCUM, UVIS-QUAD	FQ672N	FLASH=11		Pattern 3, Exps 1-1 in S II (02) (3)	600 Secs (1246 Secs) *[==>623.0 Secs (Pattern 1)]* *[==>623.0 Secs (Pattern 2)]*	***[1]***
	Comments: Both FQ672N and FQ674 should be read out (readout amplifiers D and B). *UVIS-QUAD so that FQ762N and FQ674N at positions S2 and S4 will cover the same regions.*								
2		(7) CYGNUS-LOOP -S2	WFC3/UVIS, ACCUM, UVIS-QUAD	FQ674N	FLASH=11		Pattern 3, Exps 2-2 in S II (02) (3)	600 Secs (1246 Secs) *[==>623.0 Secs (Pattern 1)]* *[==>623.0 Secs (Pattern 2)]*	***[1]***
	Comments: Both FQ672N and FQ674N should be read out (readout amplifiers D and B). *UVIS-QUAD so that FQ762N and FQ674N at positions S2 and S4 will cover the same regions*								
3	Exposure3 - (SII-3)	(9) CYGNUS-LOOP -S3	WFC3/UVIS, ACCUM, UVIS-QUAD	FQ672N	FLASH=11		Pattern 3, Exps 3-3 in S II (02) (3)	600 Secs (1246 Secs) *[==>623.0 Secs (Pattern 1)]* *[==>623.0 Secs (Pattern 2)]*	***[2]***
	Comments: Both FQ672N and FQ674N should be read out (readout amplifiers B and D). *UVIS-QUAD so that FQ762N and FQ674N at positions S2 and S4 will cover the same regions*								
4	Exposure 4, SII-3	(9) CYGNUS-LOOP -S3	WFC3/UVIS, ACCUM, UVIS-QUAD	FQ674N	FLASH=11		Pattern 3, Exps 4-4 in S II (02) (3)	600 Secs (1246 Secs) *[==>623.0 Secs (Pattern 1)]* *[==>623.0 Secs (Pattern 2)]*	***[2]***
	Comments: Both FQ672N and FQ674N should be read out (readout amplifiers B and D). *UVIS-QUAD so that FQ762N and FQ674N at positions S2 and S4 will cover the same regions*								

Orbit Structure




Orbit 2
Server Version: 20170613
Overhead
Pointing Maneuver
Overhead
Pointing Maneuver
Pointing Maneuver
Overhead
Overhead
Unused Orbital Visibility = 2
GS Acq
Exp. 3
Exp. 3
Exp. 4
Exp. 4
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15285, G140L, G230L, G430L (03) Wed Jul 19 21:06:26 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS, STIS/NUV-MAMA, STIS/CCD, STIS/FUV-MAMA

Special Requirements: ORIENT 285D TO 305 D

Comments: This visit contains low resolution spectra with G140L, G230L and G430L, and there are 3 parallel observations with WFC3.

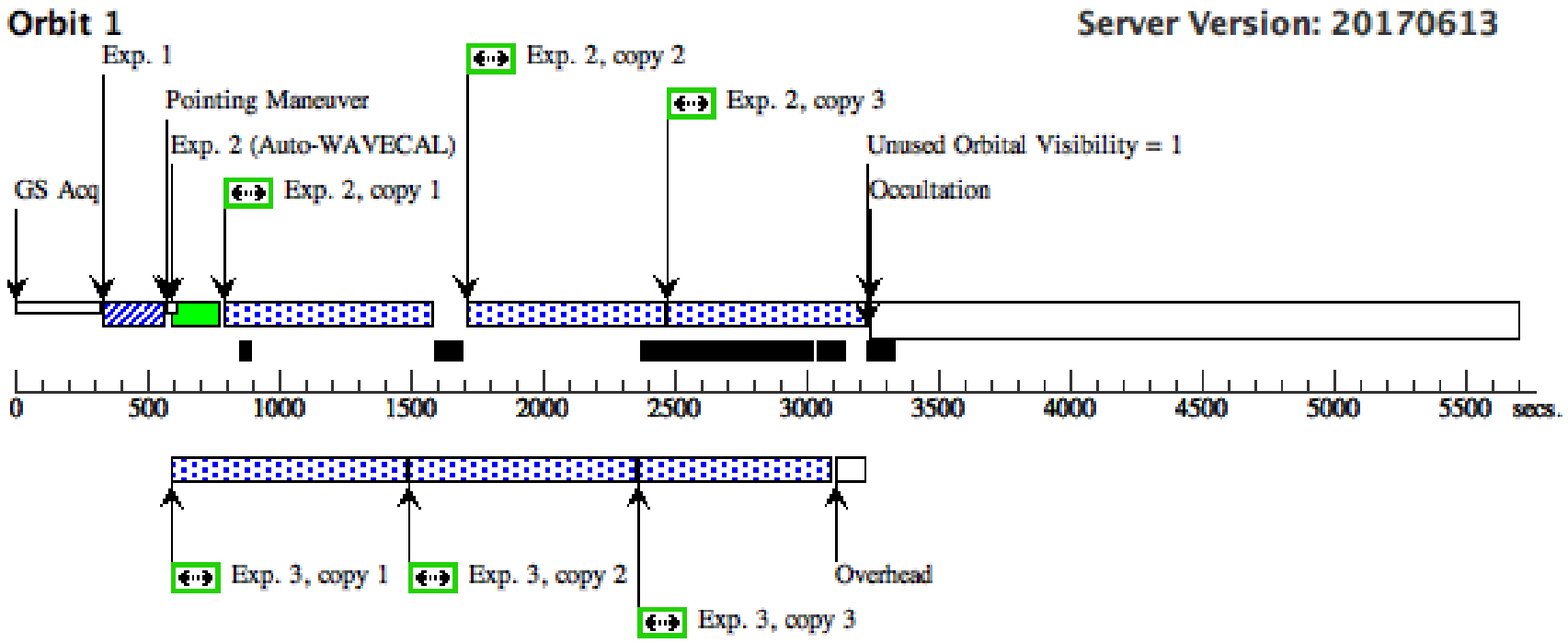
Fixed Targets

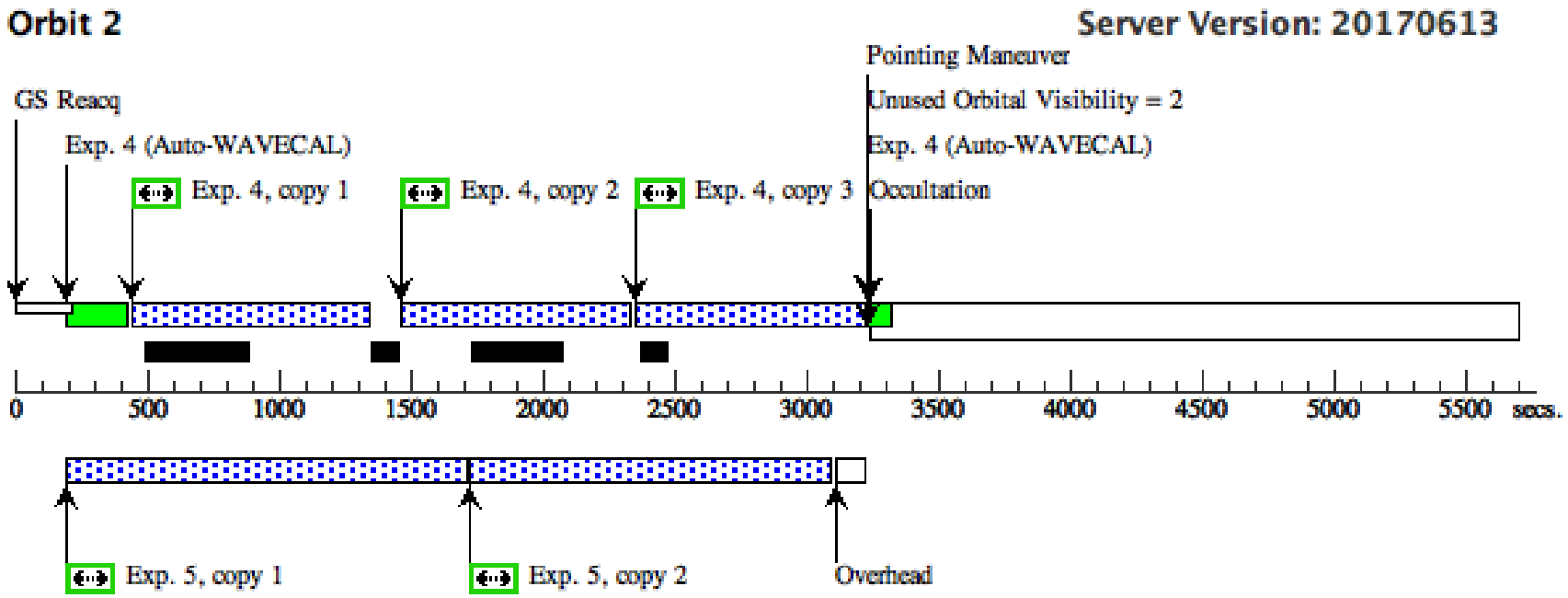
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	CYGNUS-LOOP-STIS	RA: 20 45 37.8530 (311.4077208d) Dec: +30 59 52.49 (30.99791d) Equinox: J2000		V=25+/-1 O III 5007 flux is 0.0035 photon s/(cm2 s square arcsec)	Reference Frame: ICRS
Comments: Extended=YES					
(10)	GSC0268701014	RA: 20 45 42.1920 (311.4258000d) Dec: +31 01 3.93 (31.01776d) Equinox: J2000		V=13.46+/-0.4	Reference Frame: ICRS
Comments: Extended=NO					

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Offset star (STIS.ta.1009209)	(10) GSC0268701014	STIS/CCD, ACQ, F28X50LP	MIRROR				0.3 Secs (0.3 Secs) *[==>]*	***[1]***
2	G140L (STIS.sp.1005090)	(1) CYGNUS-LOOP-STIS	STIS/FUV-MAMA, ACCUM, 52X2	G140L 1425 A			Prime + Parallel Group 2-3 in G140L, G230L, G430L (03)	700 Secs X 3 (2220 Secs) *[==>740.0 Secs (Copy 1)]* *[==>740.0 Secs (Copy 2)]* *[==>740.0 Secs (Copy 3)]*	***[1]***
3	Parallel O I	ANY	WFC3/UVIS, ACCUM, UVIS-CENTER	F631N	FLASH=10		Prime + Parallel Group 2-3 in G140L, G230L, G430L (03)	650 Secs X 3 (2208 Secs) *[==>736.0 Secs (Copy 1)]* *[==>736.0 Secs (Copy 2)]* *[==>736.0 Secs (Copy 3)]*	***[1]***
4	G230L (STIS.sp.1005094)	(1) CYGNUS-LOOP-STIS	STIS/NUV-MAMA, ACCUM, 52X2	G230L 2376 A			Prime + Parallel Group 4-5 in G140L, G230L, G430L (03)	820 Secs X 3 (2583 Secs) *[==>861.0 Secs (Copy 1)]* *[==>861.0 Secs (Copy 2)]* *[==>861.0 Secs (Copy 3)]*	***[2]***
5	Parallel O II	ANY	WFC3/UVIS, ACCUM, UVIS-CENTER	F373N	FLASH=10		Prime + Parallel Group 4-5 in G140L, G230L, G430L (03)	1200 Secs X 2 (2754 Secs) *[==>1377.0 Secs (Copy 1)]* *[==>1377.0 Secs (Copy 2)]*	***[2]***
6	G430L	(1) CYGNUS-LOOP-STIS	STIS/CCD, ACCUM, 52X0.2	G430L 4300 A	CR-SPLIT=3		Prime + Parallel Group 6-7 in G140L, G230L, G430L (03)	2400 Secs (2649 Secs) *[==>883.0 Secs (Split 1)]* *[==>883.0 Secs (Split 2)]* *[==>883.0 Secs (Split 3)]*	***[3]***
7	Parallel H alpha	ANY	WFC3/UVIS, ACCUM, UVIS-CENTER	F656N	FLASH=10		Prime + Parallel Group 6-7 in G140L, G230L, G430L (03)	850 Secs X 3 (2619 Secs) *[==>873.0 Secs (Copy 1)]* *[==>873.0 Secs (Copy 2)]* *[==>873.0 Secs (Copy 3)]*	***[3]***

Orbit Structure




Orbit 2
Server Version: 20170613
Pointing Maneuver
GS Reacq
Unused Orbital Visibility = 2
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Exp. 4 (Auto-WAVECAL)
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Exp. 4, copy 2
Exp. 4, copy 3
Occultation
0
500
1000
1500
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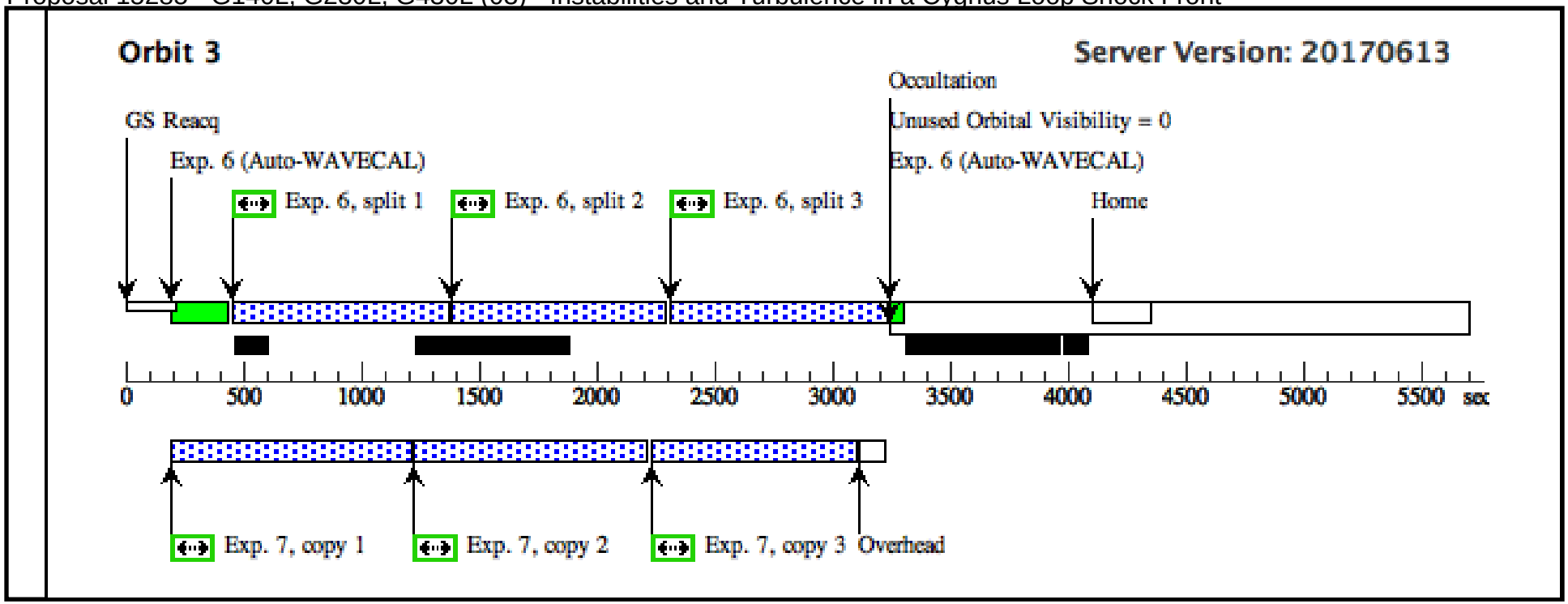
2500
3000
3500
4000
4500
5000
5500
secs.
Exp. 5, copy 1
Exp. 5, copy 2
Overhead


Orbit 3
Server Version: 20170613
Occultation
GS Reacq
Unused Orbital Visibility = 0
Exp. 6 (Auto-WAVECAL)
Exp. 6 (Auto-WAVECAL)
Exp. 6, split 1
Exp. 6, split 2
Exp. 6, split 3
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500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec
Exp. 7, copy 1
Exp. 7, copy 2
Exp. 7, copy 3
Overhead

Visit

Proposal 15285, G750L, G430M, G750M (04) Wed Jul 19 21:06:26 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS, STIS/CCD

Special Requirements: SAME ORIENT AS 03

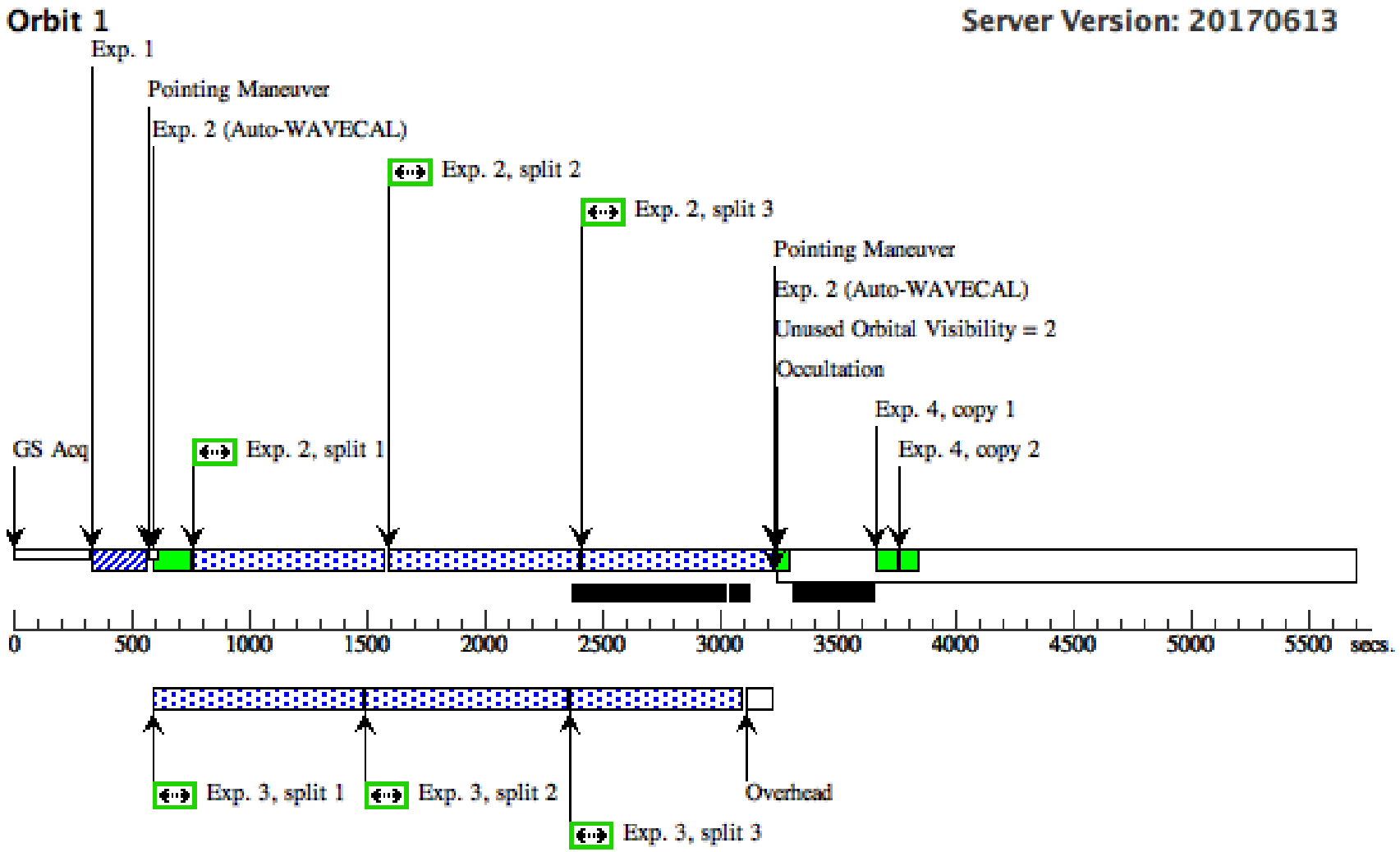
Fixed Targets

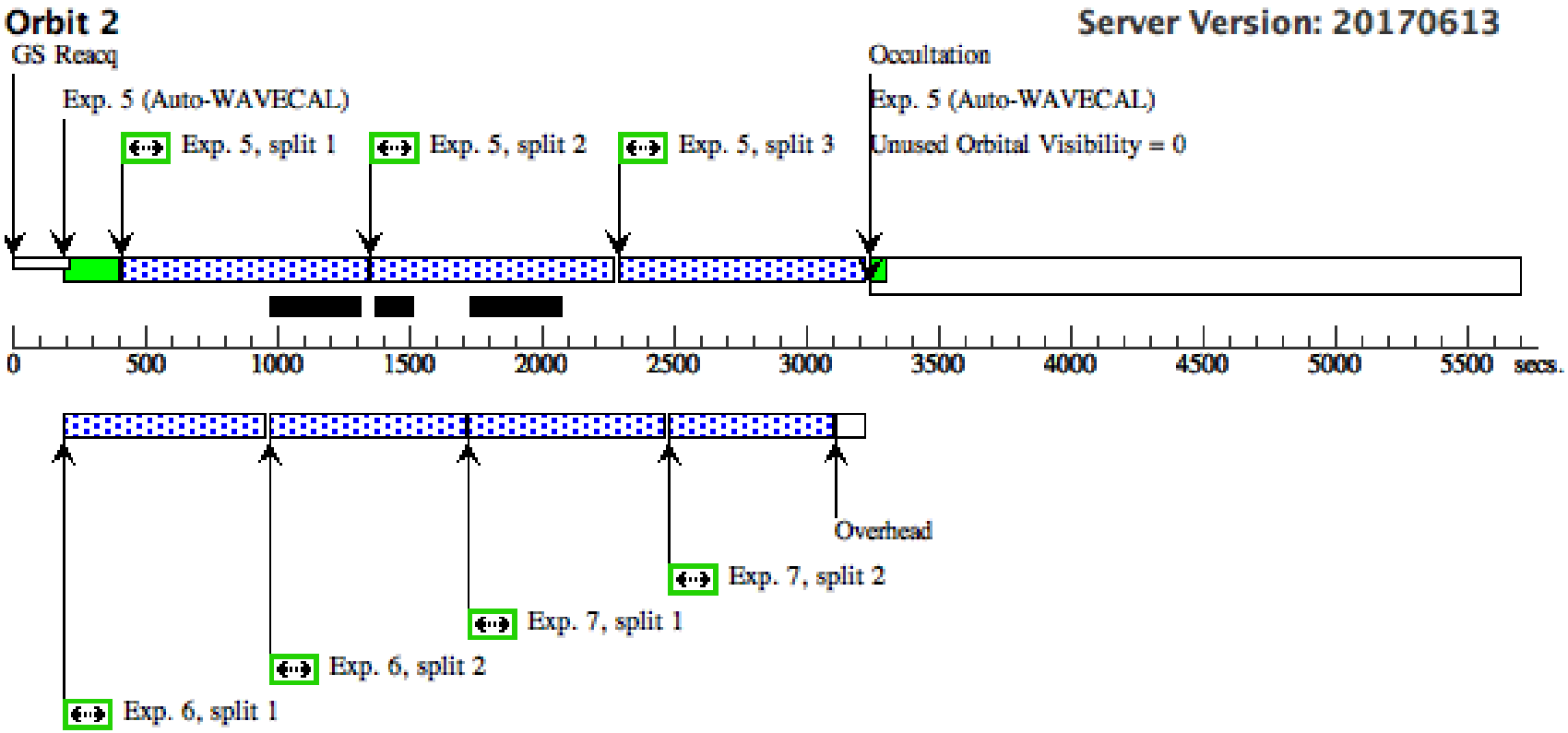
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	CYGNUS-LOOP-STIS	RA: 20 45 37.8530 (311.4077208d) Dec: +30 59 52.49 (30.99791d) Equinox: J2000		V=25+/-1 O III 5007 flux is 0.0035 photon s/(cm2 s square arcsec)	Reference Frame: ICRS
Comments: Extended=YES					
(10)	GSC0268701014	RA: 20 45 42.1920 (311.4258000d) Dec: +31 01 3.93 (31.01776d) Equinox: J2000		V=13.46+/-0.4	Reference Frame: ICRS
Comments: Extended=NO					

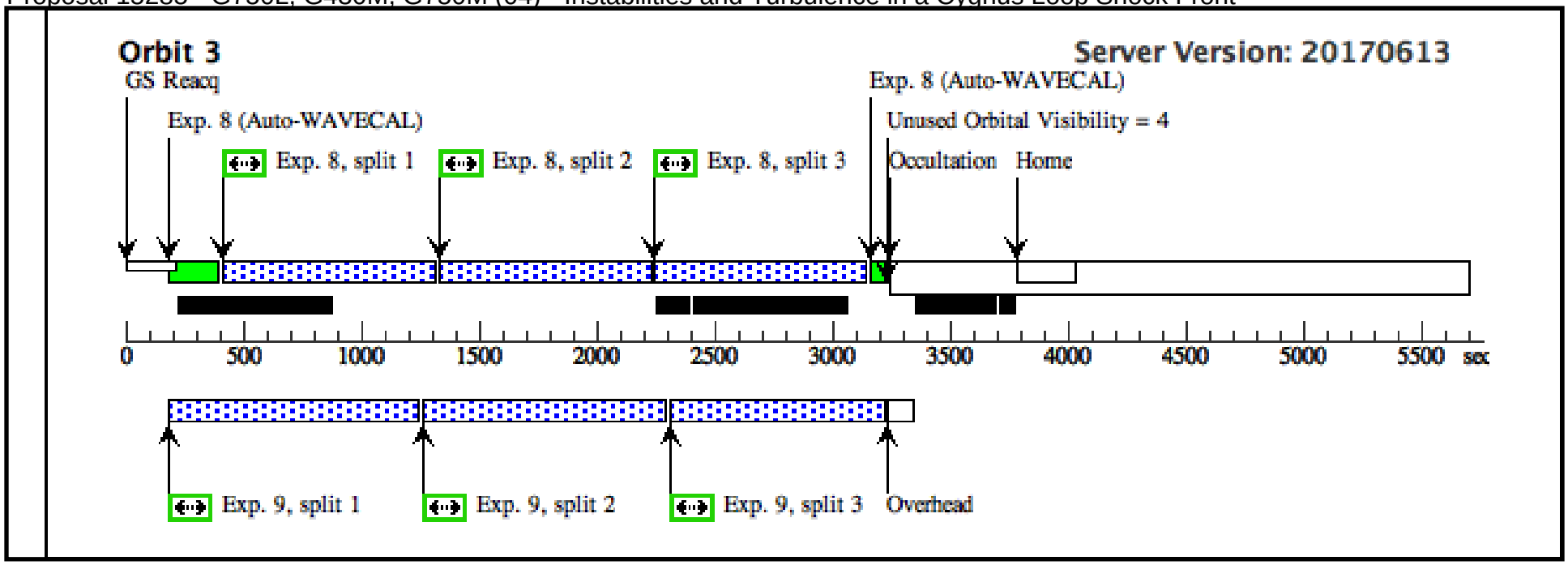
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Offset star (STIS.ta.1009209)	(10) GSC02687010104	STIS/CCD, ACQ, F28X50LP	MIRROR				0.2 Secs (0.2 Secs) *[==>]*	*[1]*
2	G750L	(1) CYGNUS-LOOP-STIS	STIS/CCD, ACCUM, 52X0.2	G750L 7751 A	CR-SPLIT=3		Prime + Parallel Group 2-3 in G750L, G430M, G750M (04)	2200 Secs (2328.9 Secs) *[==>776.3 Secs (Split 1)]* *[==>776.3 Secs (Split 2)]* *[==>776.3 Secs (Split 3)]*	*[1]*
3	Parallel He I I 4686	ANY	WFC3/UVIS, ACCUM, UVIS-CENTER	F469N	FLASH=10; CR-SPLIT=3		Prime + Parallel Group 2-3 in G750L, G430M, G750M (04)	2200 Secs (2205.9 Secs) *[==>735.3 Secs (Split 1)]* *[==>735.3 Secs (Split 2)]* *[==>735.3 Secs (Split 3)]*	*[1]*
4		CCDFLAT	STIS/CCD, ACCUM, 52X0.2	G750L 7751 A				*[==>(Copy 1)]* *[==>(Copy 2)]*	*[1]*
5	G430M	(1) CYGNUS-LOOP-STIS	STIS/CCD, ACCUM, 52X0.1	G430M 4961 A	CR-SPLIT=3		Prime + Parallel Group 5-7 in G750L, G430M, G750M (04)	2600 Secs (2683.8 Secs) *[==>894.6 Secs (Split 1)]* *[==>894.6 Secs (Split 2)]* *[==>894.6 Secs (Split 3)]*	*[2]*
6	Parallel S II	ANY	WFC3/UVIS, ACCUM, UVIS-QUAD	FQ672N	FLASH=12; CR-SPLIT=2		Prime + Parallel Group 5-7 in G750L, G430M, G750M (04)	1000 Secs (1240 Secs) *[==>620.0 Secs (Split 1)]* *[==>620.0 Secs (Split 2)]*	*[2]*
Comments: Read out both S II quad filters (amplifiers B and D)									
7	Parallel S II 6732	ANY	WFC3/UVIS, ACCUM, UVIS-QUAD	FQ674N	FLASH=12; CR-SPLIT=2		Prime + Parallel Group 5-7 in G750L, G430M, G750M (04)	1000 Secs (1240 Secs) *[==>620.0 Secs (Split 1)]* *[==>620.0 Secs (Split 2)]*	*[2]*
Comments: Read out both S II quad filters (amplifiers B and D)									
8	G750M	(1) CYGNUS-LOOP-STIS	STIS/CCD, ACCUM, 52X0.1	G750M 6581 A	CR-SPLIT=3		Prime + Parallel Group 8-9 in G750L, G430M, G750M (04)	2600 Secs (2611.8 Secs) *[==>870.6 Secs (Split 1)]* *[==>870.6 Secs (Split 2)]* *[==>870.6 Secs (Split 3)]*	*[3]*
9	Parallel Ne I V	ANY	WFC3/UVIS, ACCUM, UVIS-QUAD	FQ243N	FLASH=11; CR-SPLIT=3		Prime + Parallel Group 8-9 in G750L, G430M, G750M (04)	2700 Secs (2736 Secs) *[==>912.0 Secs (Split 1)]* *[==>912.0 Secs (Split 2)]* *[==>912.0 Secs (Split 3)]*	*[3]*

Orbit Structure




Orbit 2
Server Version: 20170613
GS Reacq
Exp. 5 (Auto-WAVECAL)
Exp. 5, split 1
Exp. 5, split 2
Exp. 5, split 3
Occultation
Exp. 5 (Auto-WAVECAL)
Unused Orbital Visibility = 0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
secs.
Overhead
Exp. 7, split 2
Exp. 7, split 1
Exp. 6, split 2
Exp. 6, split 1


Orbit 3
Server Version: 20170613
GS Reacq
Exp. 8 (Auto-WAVECAL)
Exp. 8, split 1
Exp. 8, split 2
Exp. 8, split 3
Exp. 8 (Auto-WAVECAL)
Unused Orbital Visibility = 4
Occultation
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec
Exp. 9, split 1
Exp. 9, split 2
Exp. 9, split 3
Overhead

Visit

Proposal 15285, O III 4364 (05) Wed Jul 19 21:06:26 GMT 2017

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 15D TO 35 D; ORIENT 195D TO 220 D

Diagnostics

(O III 4363 (05.001)) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

(O III 4363 (05.002)) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=WFC3-UVIS-DITHER-LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(1), (2)

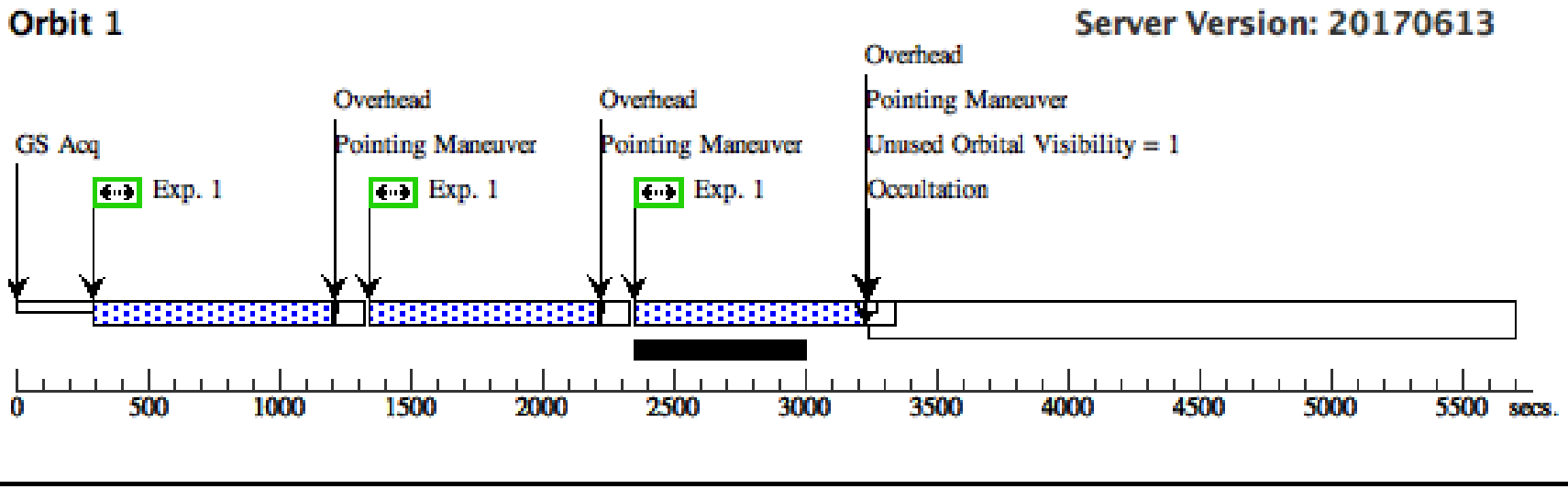
Fixed Targets

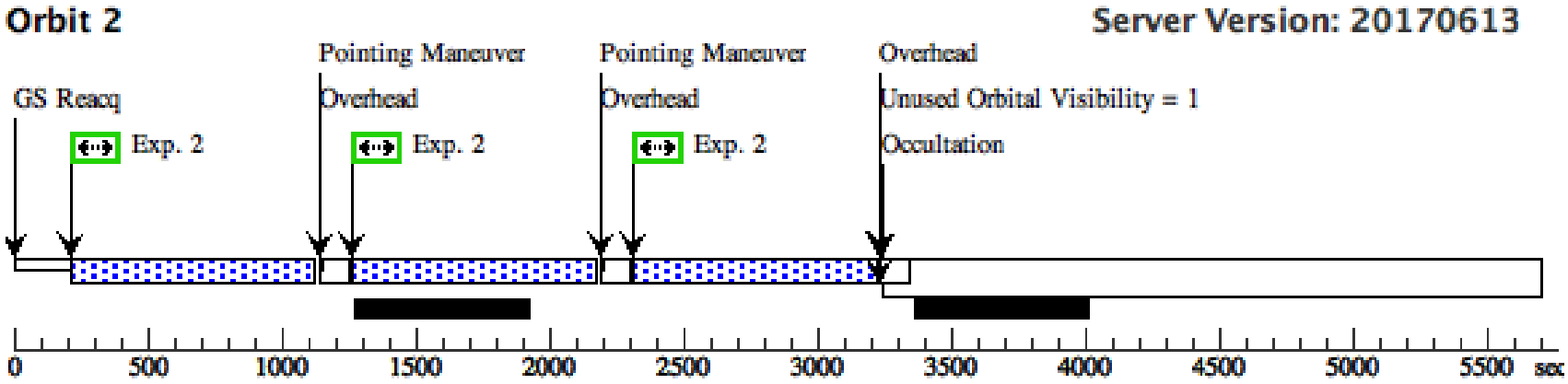
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	CYGNUS-LOOP-Q1	RA: 20 45 37.8640 (311.4077667d) Dec: +30 59 51.84 (30.99773d) Equinox: J2000		V=25+/-1 O III 5007 flux is 0.0035 photon s/(cm2 s square arcsecond)	Reference Frame: ICRS
Comments: Extended=YES					
(5)	CYGNUS-LOOP-Q2	RA: 20 45 43.3910 (311.4307958d) Dec: +31 00 16.93 (31.00470d) Equinox: J2000		V=25+/-1 O III 5007 flux is 0.0035 photon s/(cm2 s square arcsecond)	Reference Frame: ICRS
Comments: Extended=YES					

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	O III 4363	(4) CYGNUS-LOOP-Q1	WFC3/UVIS, ACCUM, UVIS-QUAD	FQ437N	FLASH=11		Pattern 2, Exps 1-1 in O III 4364 (05) (2)	800 Secs (2628 Secs) *[==>876.0 Secs (Pattern 1)]* *[==>876.0 Secs (Pattern 2)]* *[==>876.0 Secs (Pattern 3)]*	***[1]***
Comments: FQ437N to avoid Balmer line									
2	O III 4363	(5) CYGNUS-LOOP-Q2	WFC3/UVIS, ACCUM, UVIS-QUAD	FQ437N	FLASH=11		Pattern 2, Exps 2-2 in O III 4364 (05) (2)	850 Secs (2739 Secs) *[==>913.0 Secs (Pattern 1)]* *[==>913.0 Secs (Pattern 2)]* *[==>913.0 Secs (Pattern 3)]*	***[2]***
Comments: FQ437N to avoid Balmer line									

Orbit Structure





Visit

Proposal 15285, Ne IV (06) Wed Jul 19 21:06:26 GMT 2017

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 15D TO 35 D; ORIENT 195D TO 220 D

Diagnostics

(Ne IV ist position (06.001)) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

(Ne IV 2nd position (06.002)) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=WFC3-UVIS-DITHER-LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(1), (2)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	CYGNUS-LOOP-Q1	RA: 20 45 37.8640 (311.4077667d) Dec: +30 59 51.84 (30.99773d) Equinox: J2000		V=25+/-1 O III 5007 flux is 0.0035 photon s/(cm2 s square arcsecond)	Reference Frame: ICRS
Comments: Extended=YES					
(5)	CYGNUS-LOOP-Q2	RA: 20 45 43.3910 (311.4307958d) Dec: +31 00 16.93 (31.00470d) Equinox: J2000		V=25+/-1 O III 5007 flux is 0.0035 photon s/(cm2 s square arcsecond)	Reference Frame: ICRS
Comments: Extended=YES					

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Ne IV ist position	(4) CYGNUS-LOOP-Q1	WFC3/UVIS, ACCUM, UVIS-QUAD	FQ243N	FLASH=11		Pattern 2, Exps 1-1 in Ne IV (06) (2)	850 Secs (2628 Secs) *[==>876.0 Secs (Pattern 1)]* *[==>876.0 Secs (Pattern 2)]* *[==>876.0 Secs (Pattern 3)]*	***[1]***
2	Ne IV 2nd position	(5) CYGNUS-LOOP-Q2	WFC3/UVIS, ACCUM, UVIS-QUAD	FQ243N	FLASH=11		Pattern 2, Exps 2-2 in Ne IV (06) (2)	850 Secs (2739 Secs) *[==>913.0 Secs (Pattern 1)]* *[==>913.0 Secs (Pattern 2)]* *[==>913.0 Secs (Pattern 3)]*	***[2]***

Orbit Structure