



## 12959 - A Critical Test of the Nature of Lyman Continuum Emission at $z \sim 3$

Cycle: 20, Proposal Category: GO

(Availability Mode: SUPPORTED)

### INVESTIGATORS

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### 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	(3) Q1549-1-V	ACS/WFC	5	15-Jan-2013 21:03:59.0	yes
02	(4) Q1549-2-V	ACS/WFC	5	15-Jan-2013 21:04:30.0	yes
03	(5) Q1549-1-IR	WFC3/IR	3	15-Jan-2013 21:04:51.0	yes
04	(5) Q1549-1-IR	WFC3/IR	3	15-Jan-2013 21:05:08.0	yes
05	(6) Q1549-2-IR	WFC3/IR	3	15-Jan-2013 21:05:22.0	yes
06	(6) Q1549-2-IR	WFC3/IR	3	15-Jan-2013 21:05:37.0	yes
07	(1) Q1549-1-U	WFC3/UVIS	5	15-Jan-2013 21:05:48.0	yes
08	(2) Q1549-2-U	WFC3/UVIS	5	15-Jan-2013 21:06:00.0	yes

32 Total Orbits Used

## **ABSTRACT**

Escaping Lyman-continuum (LyC) radiation from star-forming galaxies is likely responsible for the reionization of the universe. However, the direct measurement of escaping LyC radiation has proven exceptionally challenging. Recent spectroscopic and imaging detections of LyC emission from  $z\sim 3$  galaxies have revealed unexpectedly high values for the escape fraction of LyC photons, as well as spatial offsets between the apparent LyC emission and non-ionizing UV continuum. These results may indicate the processes governing the production and escape of LyC photons from distant star-forming galaxies, but may also signify contamination by low-redshift interlopers near the line of sight. We have obtained ultra-deep ground-based data probing the LyC region at  $z\sim 2.85$  in the Q1549+19 field. Our sample includes both spectroscopically confirmed Lyman Break Galaxies (LBGs) and Lyman-Alpha Emitters (LAEs), with 24 apparent detections of LyC radiation. However, without high spatial resolution redshift estimates for the specific regions associated with apparent LyC emission in the vicinity of LBGs and LAEs, our interpretation of these intriguing sources is fundamentally limited. Spatially-resolved photometric redshifts based on multi-band HST imaging represents the most effective path forward. Here we propose for 32 orbits of deep WFC3/F336W, ACS/F606W, WFC3/F125W, and WFC3/160W observations in two pointings covering the majority of our apparent LyC detections. Analysis of these data will robustly remove contamination from low-redshift interlopers, and reveal the processes through which galaxies reionized the universe and maintained the ionizing background.

## **OBSERVING DESCRIPTION**

Pointings and Sample:

We propose deep WFC3/UVIS/F336W (U), ACS/F606W (V), WFC3/IR/F125W (J), and WFC3/IR/F160W (H) imaging of two pointings in the Q1549+19 field containing a sample of 15 star-forming LBGs and LAEs at  $z\sim 2.85$  with apparent LyC detections. Our primary goal is to estimate robust photometric redshifts for all morphological subcomponents associated with NB3420 detections, and therefore obtain a clean sample of high-redshift LyC detections with detailed stellar population information. As described below, deep multi-band imaging with the proposed filter set will result in robust photometric redshifts, removal of low-redshift contaminants associated with NB3420 detections, and

dissection of the nature of the apparent LyC emission.

Furthermore, with a large set of NB3420 non-detections at  $\sim 2.85\mu\text{m}$  imaged by HST within the same pointings, we will conduct a differential comparison between the spatially-resolved stellar populations of objects with and without leaking LyC emission.

#### ORIENT Strategy:

As our  $z\sim 3$  targets are distributed across each pointing, the allowed range of ORIENT angles that enables the maximum number of targets is fairly constrained. For each visit, we specify the range of allowed ORIENT angles, which optimizes the number of targets covered.

#### Orbit / Visit Strategy:

Each F336W pointing is executed in a 5-orbit visit, broken down into 10 roughly half-orbit exposures. Each F606W pointing is executed in a 5-orbit visit, broken down into 5 single-orbit, 4-exposure dither patterns. Each IR (F125W or F160W) pointing is executed in a 3-orbit visit, broken into 3 single-orbit, 4-exposure dither patterns. The proposed program requires 32 orbits (2x5 orbits in F336W, 2x5 orbits in F606W, 2x3 orbits in F125W, and 2x3 orbits in F160W).

#### Dither Strategy:

The 10 exposures for each F336W visit are executed as a set of 2 WFC3-UVIS-DITHER-BOX patterns, followed by a single WFC3-UVIS-DITHER-LINE pattern. The 20 exposures for each F606W visit are executed as a set of 5, 4-point

ACS-WFC-DITHER-BOX patterns. The 12 exposures for each WFC3/IR orbit (F125W and F160W) are executed as a set of 3, 4-point WFC3-IR-DITHER-LINE patterns. For both WFC3/IR and WFC3/UVIS observations, we use apply POS-TARG offsets between each dither pattern to improve the PSF sampling, and reduce the effects of bad pixels and droplets.

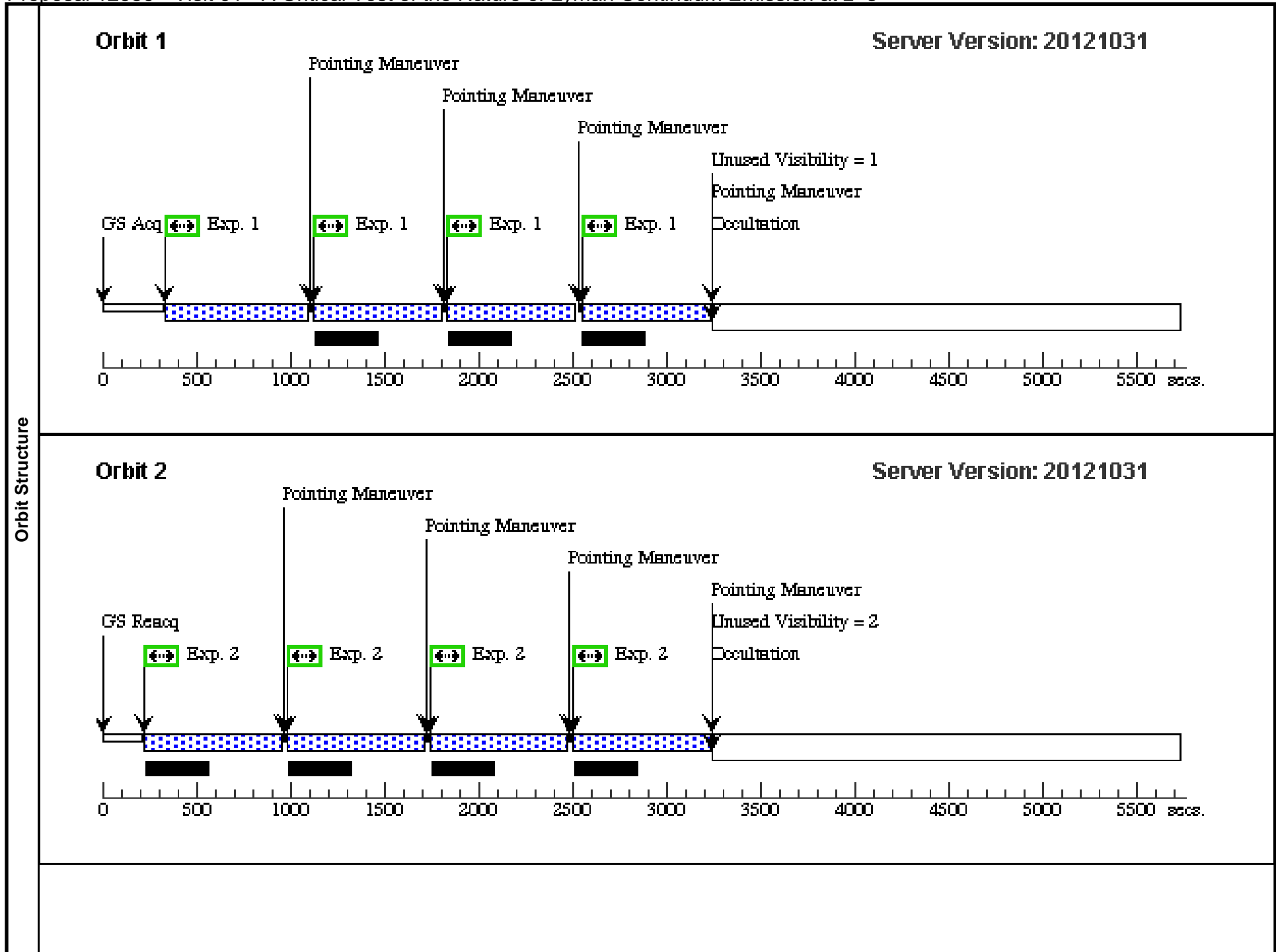
Special Concerns:

To mitigate CTE losses in our WFC3/UVIS/F336W exposures, we are using the "post-flash" capability, with FLASH=8.

Proposal 12959 - Visit 01 - A Critical Test of the Nature of Lyman Continuum Emission at z~3

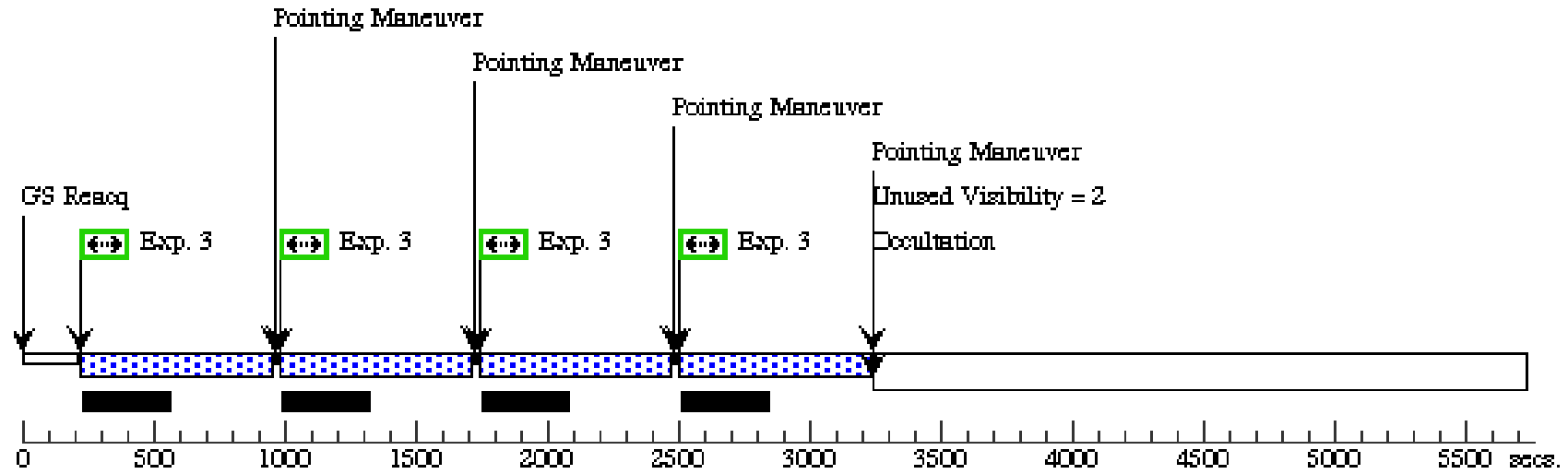
Wed Jan 16 02:06:10 GMT 2013

Visit	<b>Proposal 12959, Visit 01, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: ACS/WFC Special Requirements: ORIENT 356D TO 0 D; ORIENT 90D TO 92 D; ORIENT 175D TO 186 D; ORIENT 270D TO 273 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
	(4)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.265 Line Spacing=0.187	Coordinate Frame=POS-TARG Pattern Orientation=20.67 Angle Between Sides=69.05 Center Pattern=false		(1), (2), (3), (4), (5)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(3)	Q1549-1-V	RA: 15 52 1.8100 (238.0075417d) Dec: +19 11 22.47 (19.18958d) Equinox: J2000		V=27	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(3) Q1549-1-V	ACS/WFC, ACCUM, WFCENTER	F606W	CR-SPLIT=NO			Pattern 4, Exps 1-1 in Visit 01 (4)	554 Secs	
									[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]	[1]
	2	(3) Q1549-1-V	ACS/WFC, ACCUM, WFCENTER	F606W	CR-SPLIT=NO	POS TARG 0.5,null		Pattern 4, Exps 2-2 in Visit 01 (4)	602 Secs	
									[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]	[2]
	3	(3) Q1549-1-V	ACS/WFC, ACCUM, WFCENTER	F606W	CR-SPLIT=NO	POS TARG -0.5,null		Pattern 4, Exps 3-3 in Visit 01 (4)	602 Secs	
								[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]	[3]	
	4	(3) Q1549-1-V	ACS/WFC, ACCUM, WFCENTER	F606W	CR-SPLIT=NO	POS TARG 0.0,0.5		Pattern 4, Exps 4-4 in Visit 01 (4)	602 Secs	
								[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]	[4]	
	5	(3) Q1549-1-V	ACS/WFC, ACCUM, WFCENTER	F606W	CR-SPLIT=NO	POS TARG 0.0,-0.5		Pattern 4, Exps 5-5 in Visit 01 (4)	602 Secs	
								[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]	[5]	



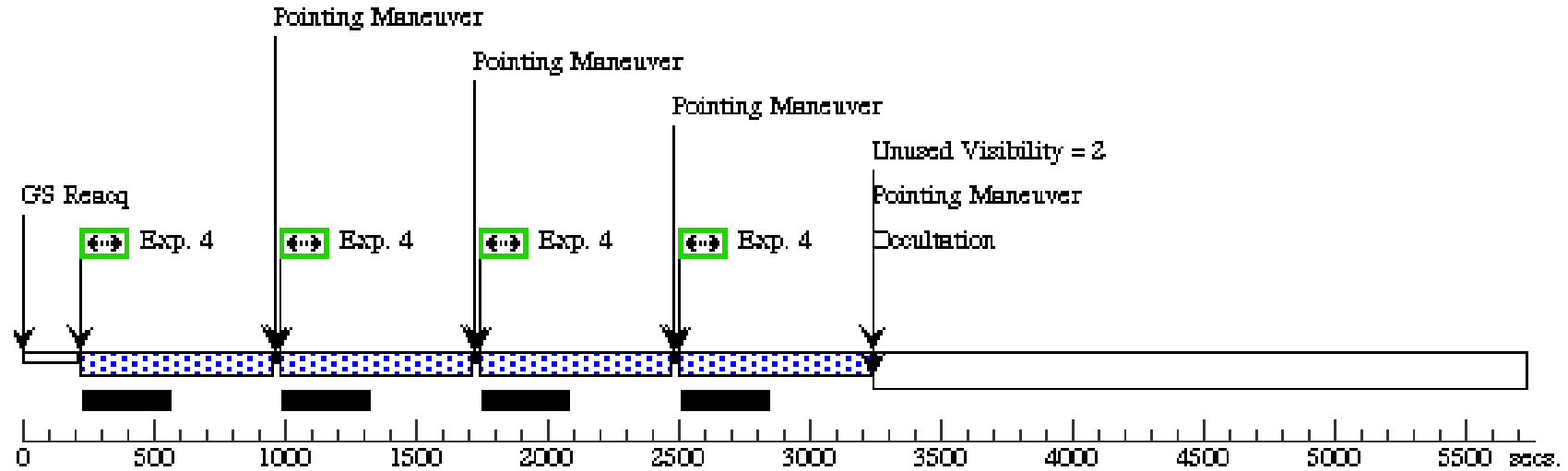
**Orbit 3**

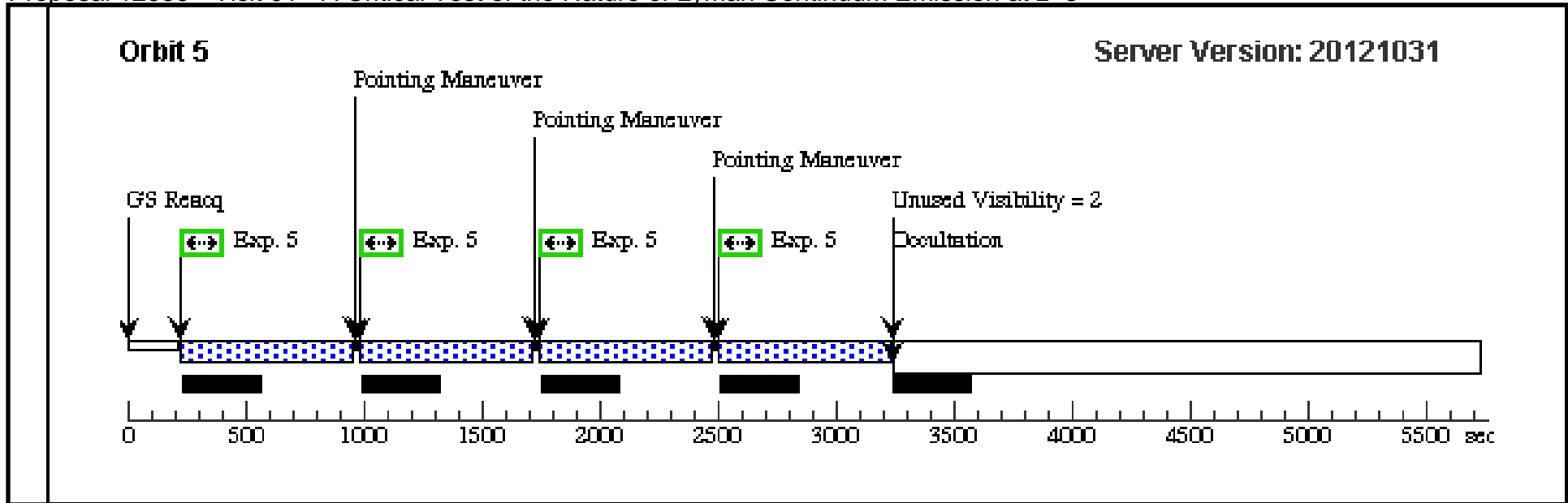
Server Version: 20121031



**Orbit 4**

Server Version: 20121031

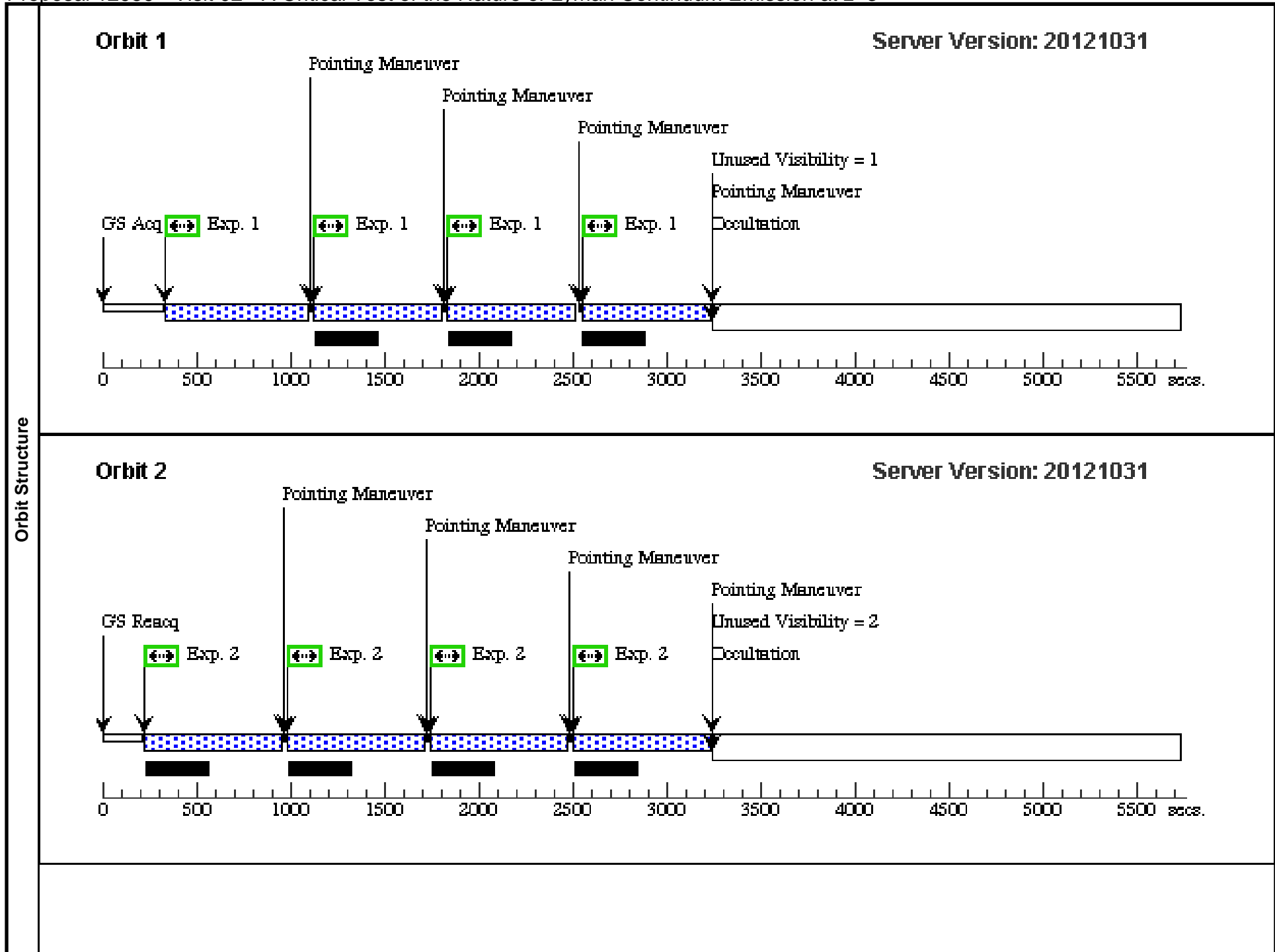




Proposal 12959 - Visit 02 - A Critical Test of the Nature of Lyman Continuum Emission at z~3

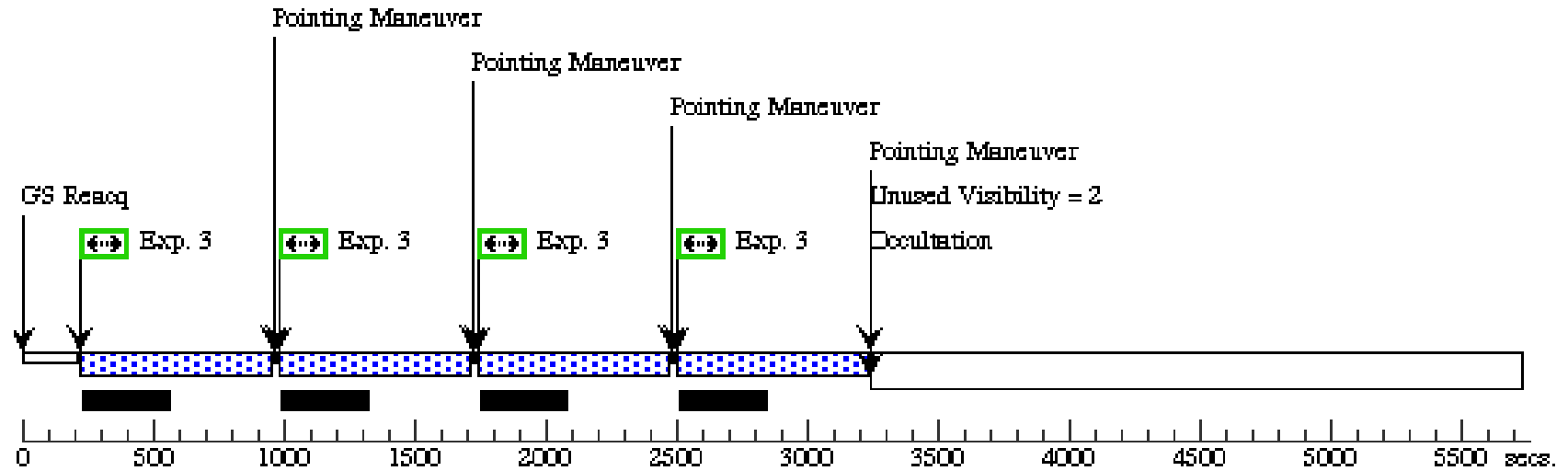
Wed Jan 16 02:06:17 GMT 2013

Visit	<b>Proposal 12959, Visit 02, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: ACS/WFC Special Requirements: ORIENT 323D TO 324 D; ORIENT 327D TO 351 D; ORIENT 354D TO 15 D; ORIENT 23D TO 42 D; ORIENT 62D TO 81 D; ORIENT 87D TO 87 D; ORIENT 92D TO 113 D; ORIENT 117D TO 141 D; ORIENT 145D TO 169 D; ORIENT 172D TO 192 D; ORIENT 196D TO 202 D; ORIENT 208D TO 225 D; ORIENT 243D TO 257 D; ORIENT 263D TO 271 D; ORIENT 275D TO 296 D; ORIENT 300D TO 312 D									
	Patterns	#	Primary Pattern		Secondary Pattern			Exposures		
		(4)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.265 Line Spacing=0.187	Coordinate Frame=POS-TARG Pattern Orientation=20.67 Angle Between Sides=69.05 Center Pattern=false				(1), (2), (3), (4), (5)		
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections		Fluxes	Miscellaneous			
	(4)	Q1549-2-V	RA: 15 51 49.7700 (237.9573750d) Dec: +19 09 46.74 (19.16298d) Equinox: J2000			V=27	Reference Frame: ICRS			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(4) Q1549-2-V	ACS/WFC, ACCUM, WFCENTER	F606W				Pattern 4, Exps 1-1 in Visit 02 (4)	554 Secs [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]
	2	(4) Q1549-2-V	ACS/WFC, ACCUM, WFCENTER	F606W			POS TARG 0.5,null	Pattern 4, Exps 2-2 in Visit 02 (4)	602 Secs [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[2]
	3	(4) Q1549-2-V	ACS/WFC, ACCUM, WFCENTER	F606W			POS TARG -0.5,null	Pattern 4, Exps 3-3 in Visit 02 (4)	602 Secs [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[3]
	4	(4) Q1549-2-V	ACS/WFC, ACCUM, WFCENTER	F606W			POS TARG 0.0,0.5	Pattern 4, Exps 4-4 in Visit 02 (4)	602 Secs [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[4]
	5	(4) Q1549-2-V	ACS/WFC, ACCUM, WFCENTER	F606W			POS TARG 0.0,-0.5	Pattern 4, Exps 5-5 in Visit 02 (4)	602 Secs [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[5]



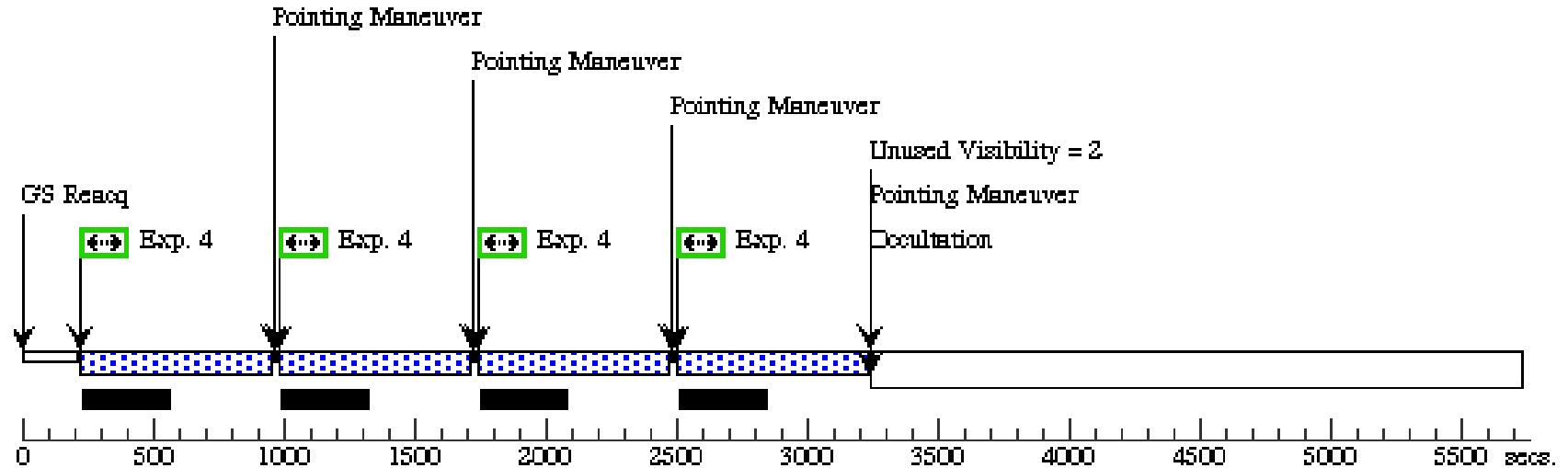
**Orbit 3**

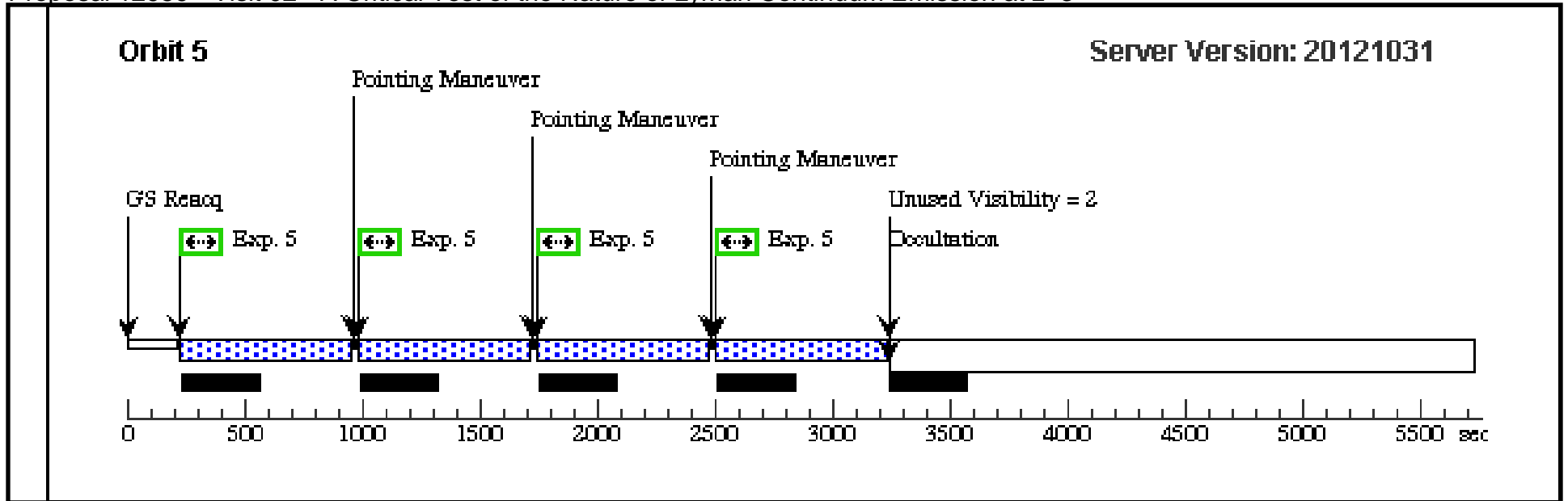
Server Version: 20121031



**Orbit 4**

Server Version: 20121031

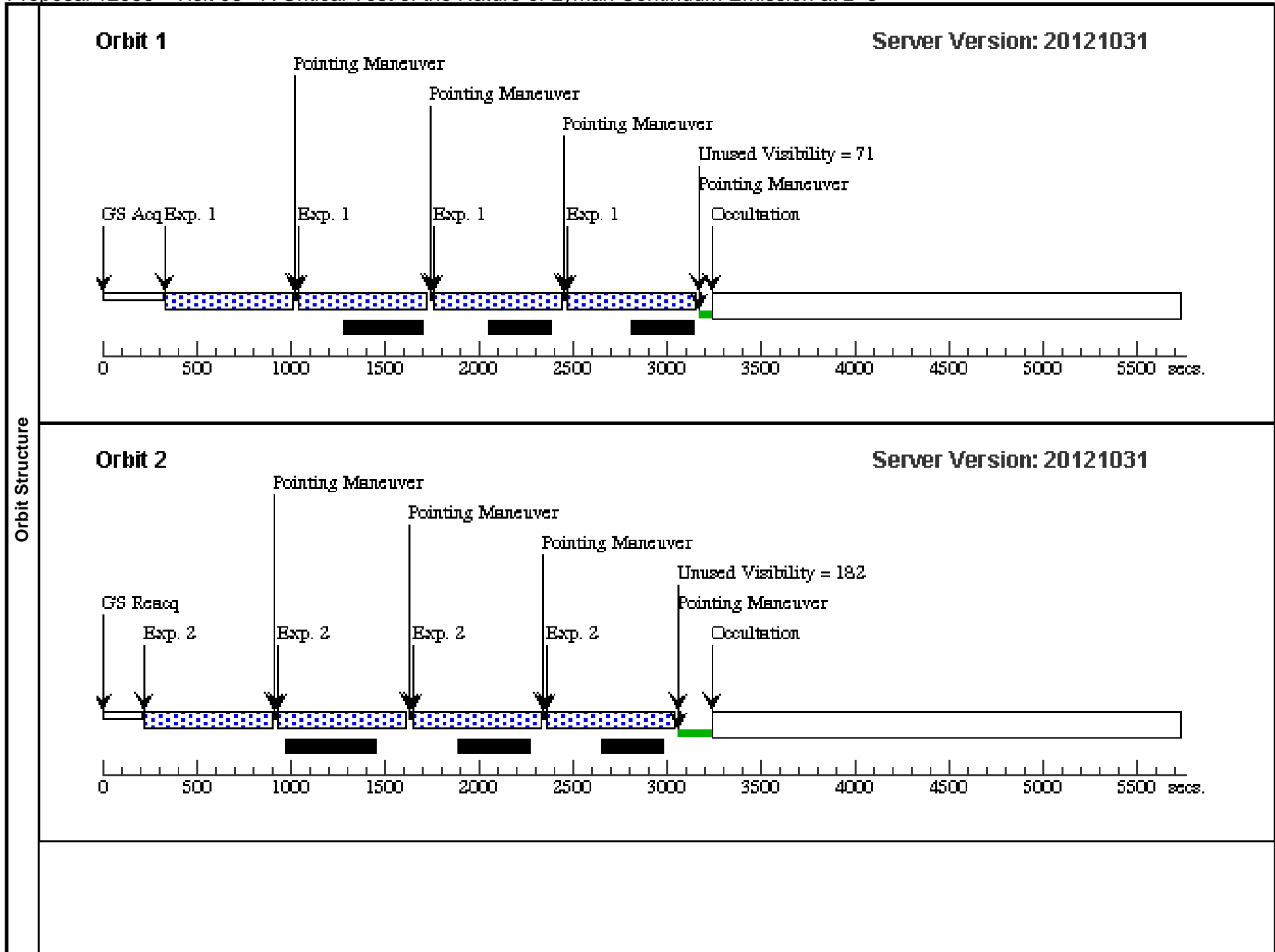


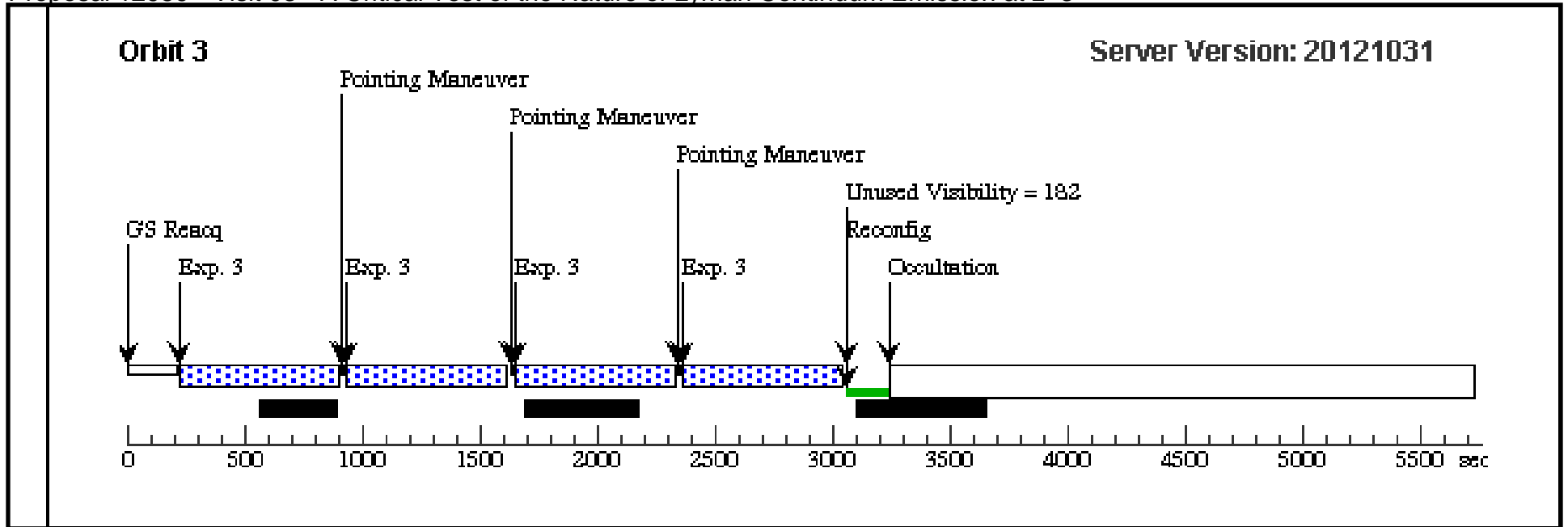


Proposal 12959 - Visit 03 - A Critical Test of the Nature of Lyman Continuum Emission at z~3

Wed Jan 16 02:06:22 GMT 2013

Visit	<b>Proposal 12959, Visit 03, scheduling</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/IR Special Requirements: ORIENT 48D TO 52 D; ORIENT 57D TO 66 D; ORIENT 79D TO 80 D; ORIENT 225D TO 242 D; ORIENT 259D TO 261 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
		(2)	Pattern Type=WFC3-IR-DITHER-LINE Purpose=DITHER Number Of Points=4 Point Spacing=0.636 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false		(1), (2), (3)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(5)	Q1549-1-IR	RA: 15 52 4.4100 (238.0183750d) Dec: +19 11 47.30 (19.19647d) Equinox: J2000		V=27	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(5) Q1549-1-IR	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 50; NSAMP=14	POS TARG 0,null	Pattern 2, Exps 1-1 i n Visit 03 (2)	[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]
	2		(5) Q1549-1-IR	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 50; NSAMP=14	POS TARG 0.424,0.424	Pattern 2, Exps 2-2 i n Visit 03 (2)	[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[2]
	3		(5) Q1549-1-IR	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 50; NSAMP=14	POS TARG -0.424,-0.424	Pattern 2, Exps 3-3 i n Visit 03 (2)	[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[3]

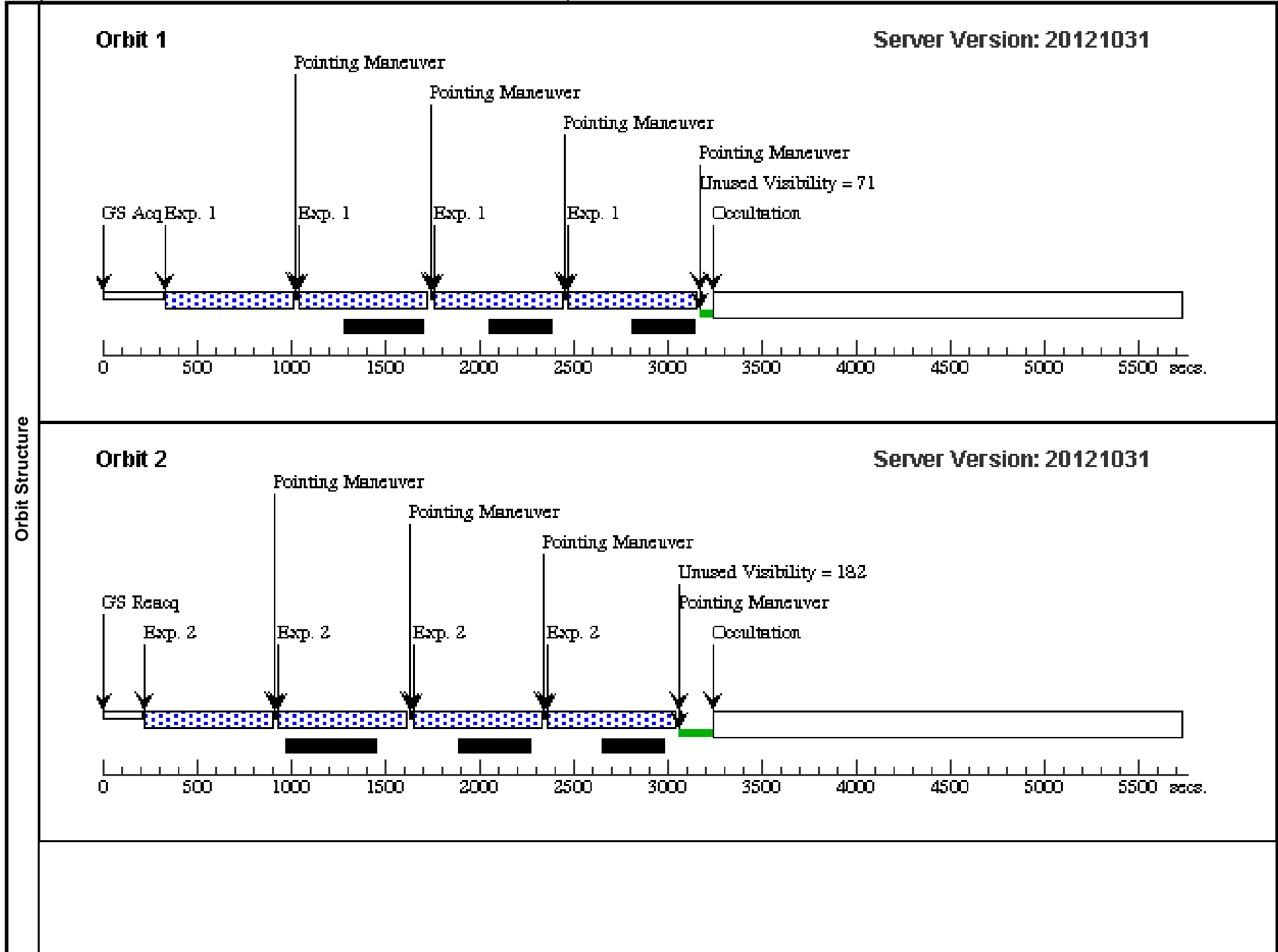




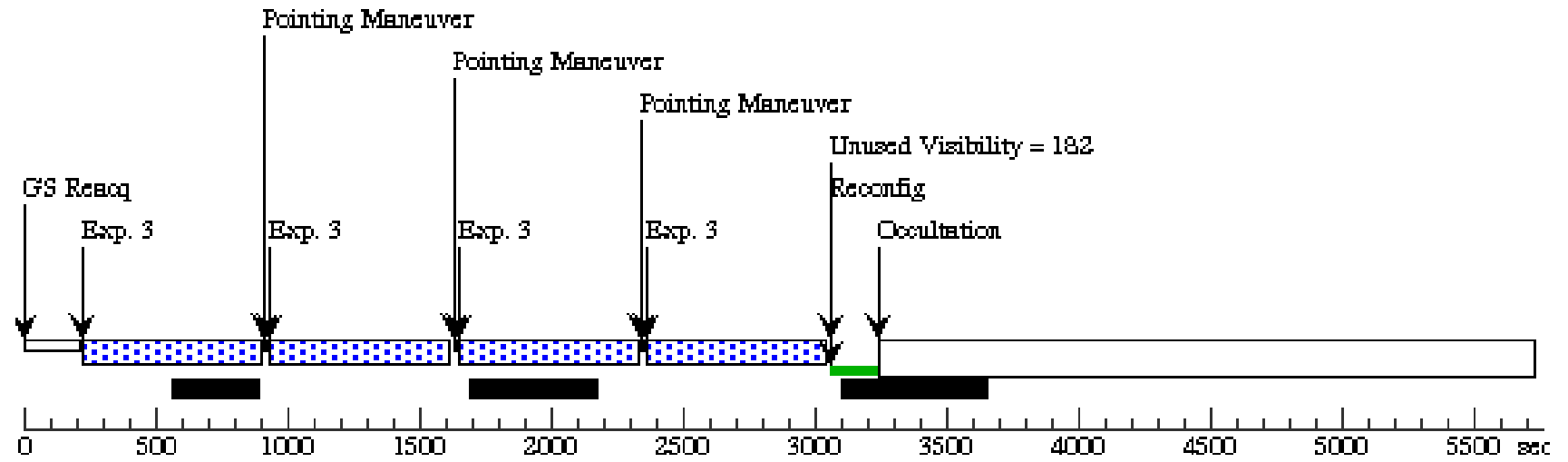
Proposal 12959 - Visit 04 - A Critical Test of the Nature of Lyman Continuum Emission at z~3

Wed Jan 16 02:06:25 GMT 2013

Visit	<b>Proposal 12959, Visit 04, scheduling</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/IR Special Requirements: ORIENT 48D TO 52 D; ORIENT 57D TO 66 D; ORIENT 79D TO 80 D; ORIENT 225D TO 242 D; ORIENT 259D TO 261 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
		(2)	Pattern Type=WFC3-IR-DITHER-LINE Purpose=DITHER Number Of Points=4 Point Spacing=0.636 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false		(1), (2), (3)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(5)	Q1549-1-IR	RA: 15 52 4.4100 (238.0183750d) Dec: +19 11 47.30 (19.19647d) Equinox: J2000		V=27	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(5) Q1549-1-IR	WFC3/IR, MULTIACCUM, IR-FIX	F125W	SAMP-SEQ=SPARS 50; NSAMP=14		Pattern 2, Exps 1-1 in Visit 04 (2)	[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]
	2		(5) Q1549-1-IR	WFC3/IR, MULTIACCUM, IR-FIX	F125W	SAMP-SEQ=SPARS 50; NSAMP=14	POS TARG 0.424,0.424	Pattern 2, Exps 2-2 in Visit 04 (2)	[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[2]
	3		(5) Q1549-1-IR	WFC3/IR, MULTIACCUM, IR-FIX	F125W	SAMP-SEQ=SPARS 50; NSAMP=14	POS TARG -0.424,-0.424	Pattern 2, Exps 3-3 in Visit 04 (2)	[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[3]



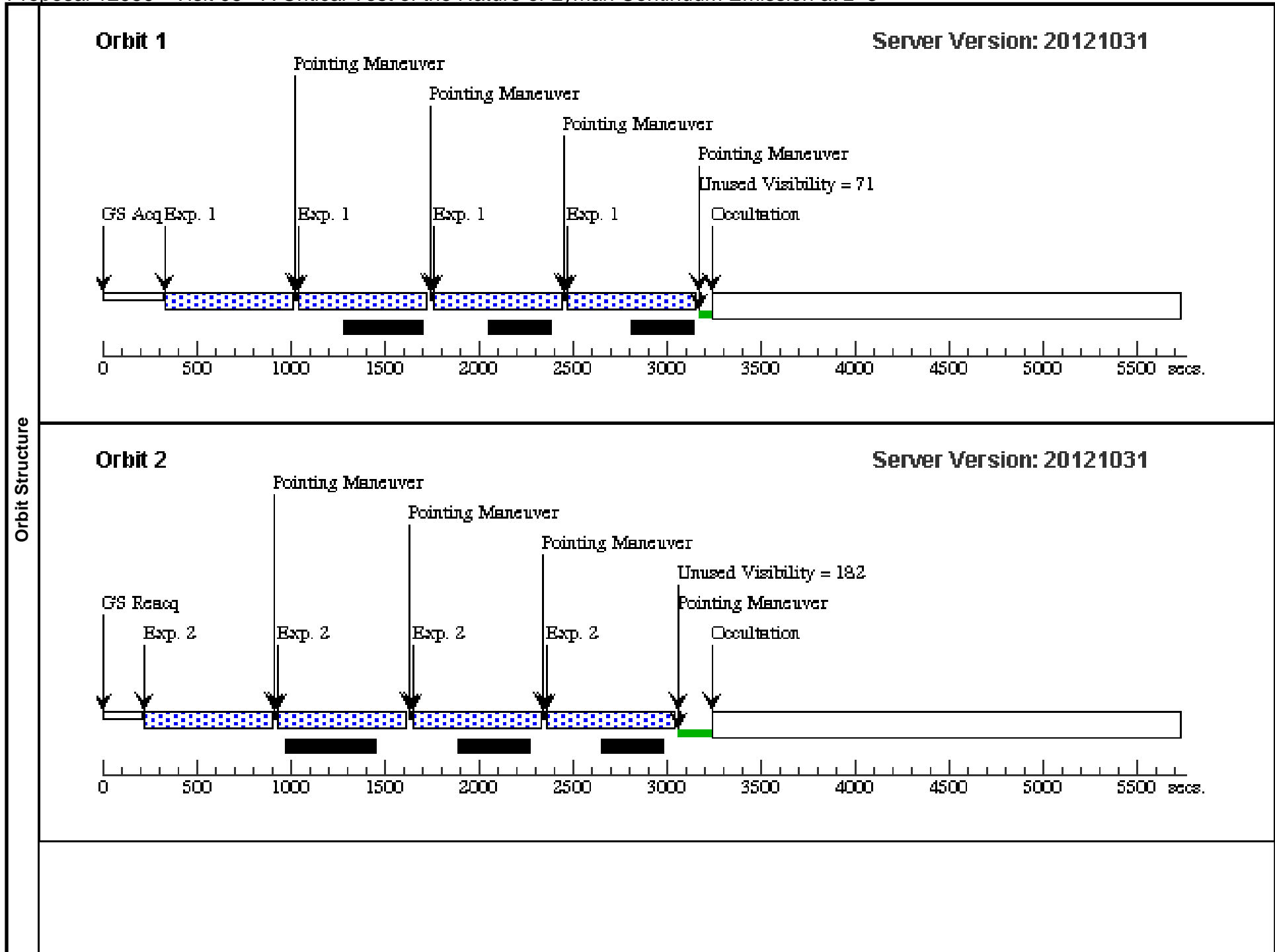
**Orbit 3**

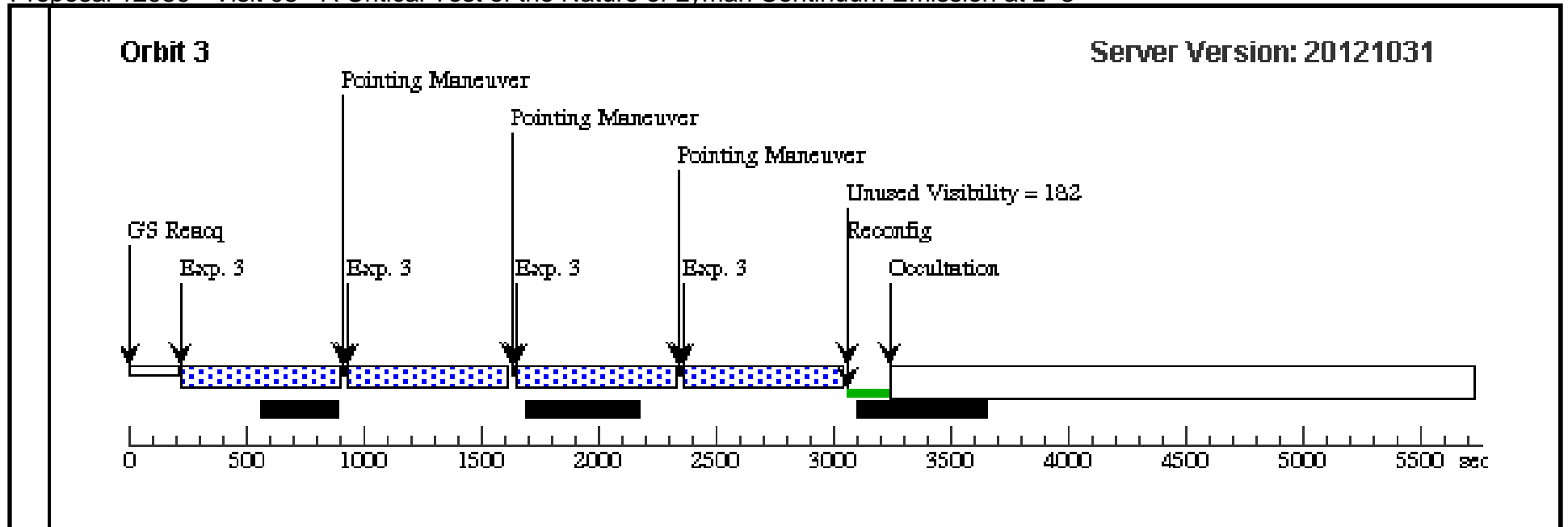


Proposal 12959 - Visit 05 - A Critical Test of the Nature of Lyman Continuum Emission at z~3

Wed Jan 16 02:06:27 GMT 2013

Visit	<b>Proposal 12959, Visit 05, completed</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/IR Special Requirements: ORIENT 40D TO 45 D; ORIENT 142D TO 142 D; ORIENT 222D TO 224 D; ORIENT 318D TO 321 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
		(2)	Pattern Type=WFC3-IR-DITHER-LINE Purpose=DITHER Number Of Points=4 Point Spacing=0.636 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false		(1), (2), (3)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(6)	Q1549-2-IR	RA: 15 51 49.4860 (237.9561917d) Dec: +19 10 2.88 (19.16747d) Equinox: J2000		V=27	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(6) Q1549-2-IR	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 50; NSAMP=14	POS TARG 0,null	Pattern 2, Exps 1-1 i n Visit 05 (2)	[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]
	2		(6) Q1549-2-IR	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 50; NSAMP=14	POS TARG 0.424,0.424	Pattern 2, Exps 2-2 i n Visit 05 (2)	[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[2]
	3		(6) Q1549-2-IR	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 50; NSAMP=14	POS TARG -0.424,-0.424	Pattern 2, Exps 3-3 i n Visit 05 (2)	[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[3]

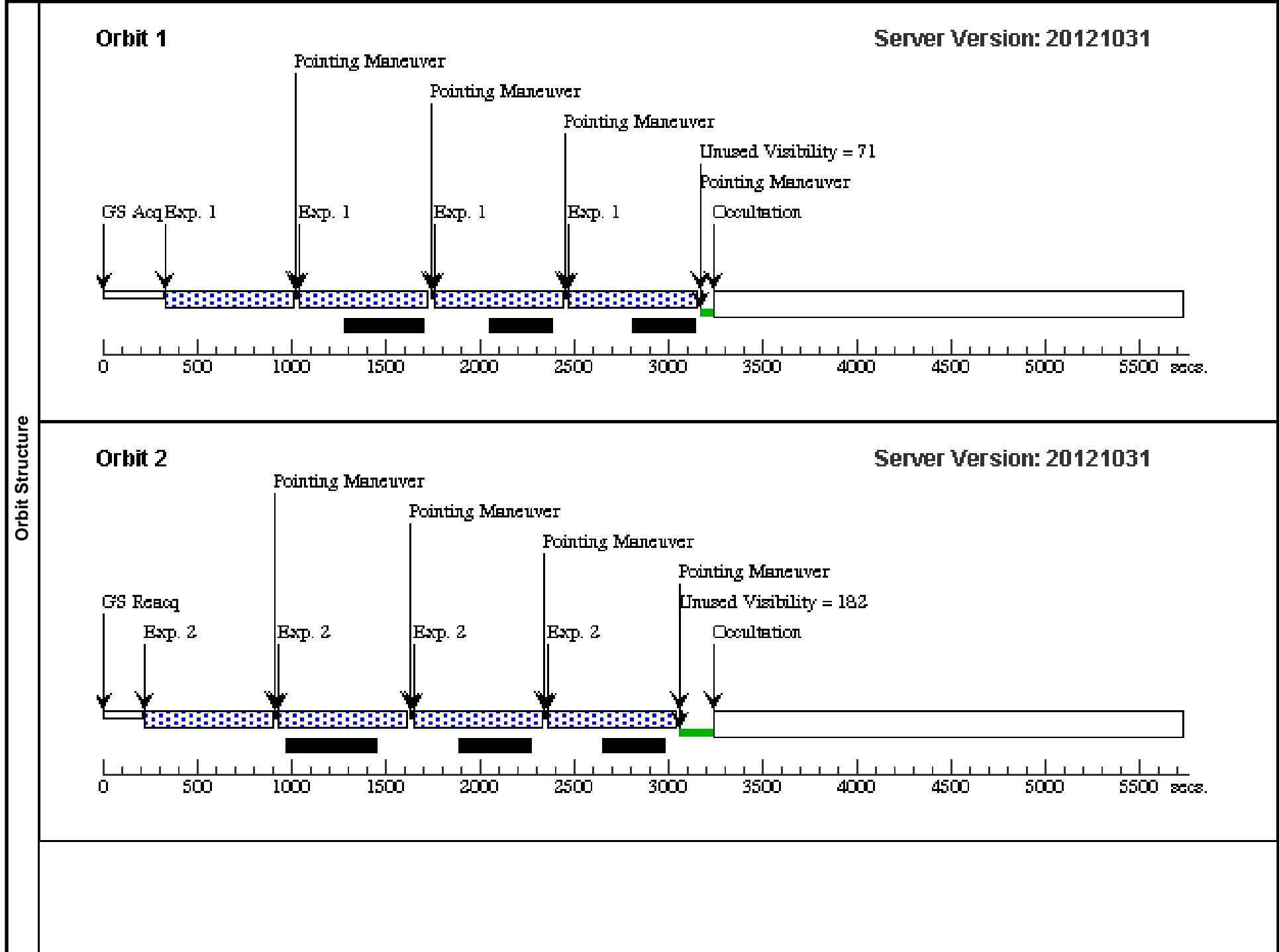


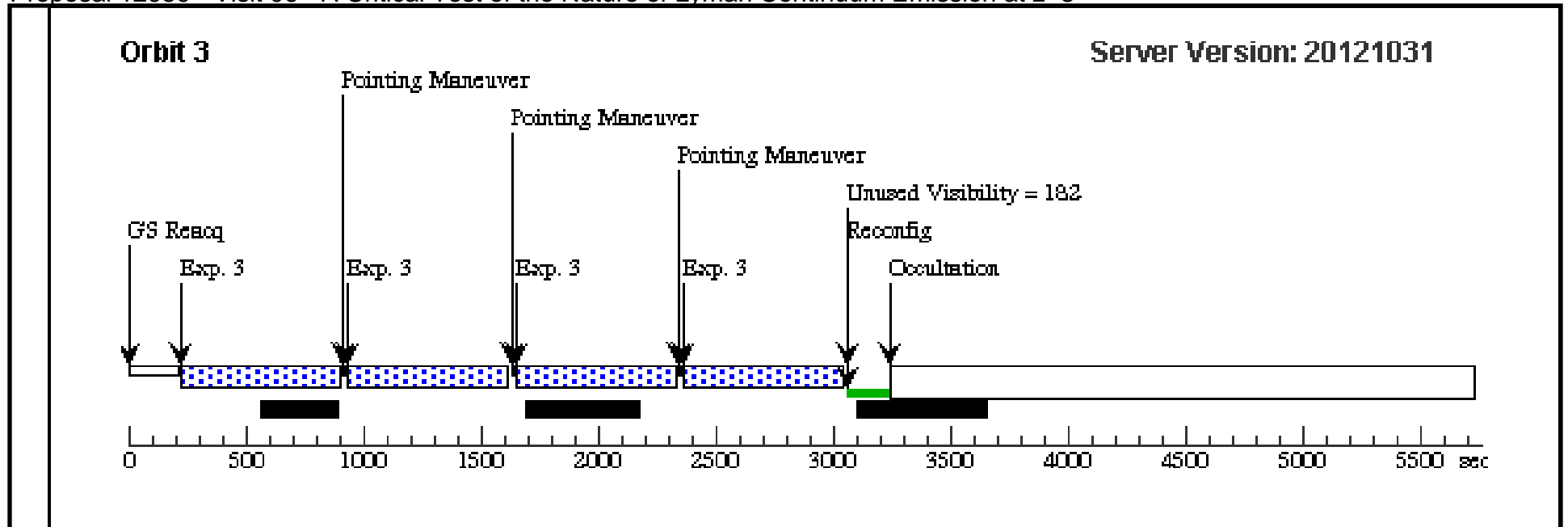


Proposal 12959 - Visit 06 - A Critical Test of the Nature of Lyman Continuum Emission at z~3

Wed Jan 16 02:06:30 GMT 2013

Visit	<b>Proposal 12959, Visit 06, completed</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/IR Special Requirements: ORIENT 40D TO 45 D; ORIENT 142D TO 142 D; ORIENT 222D TO 224 D; ORIENT 318D TO 321 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
		(2)	Pattern Type=WFC3-IR-DITHER-LINE Purpose=DITHER Number Of Points=4 Point Spacing=0.636 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false		(1), (2), (3)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(6)	Q1549-2-IR	RA: 15 51 49.4860 (237.9561917d) Dec: +19 10 2.88 (19.16747d) Equinox: J2000		V=27	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(6) Q1549-2-IR	WFC3/IR, MULTIACCUM, IR-FIX	F125W	SAMP-SEQ=SPARS 50; NSAMP=14	POS TARG 0,null	Pattern 2, Exps 1-1 i n Visit 06 (2)	[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]
	2		(6) Q1549-2-IR	WFC3/IR, MULTIACCUM, IR-FIX	F125W	SAMP-SEQ=SPARS 50; NSAMP=14	POS TARG 0.424,0.424	Pattern 2, Exps 2-2 i n Visit 06 (2)	[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[2]
	3		(6) Q1549-2-IR	WFC3/IR, MULTIACCUM, IR-FIX	F125W	SAMP-SEQ=SPARS 50; NSAMP=14	POS TARG -0.424,-0.424	Pattern 2, Exps 3-3 i n Visit 06 (2)	[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[3]

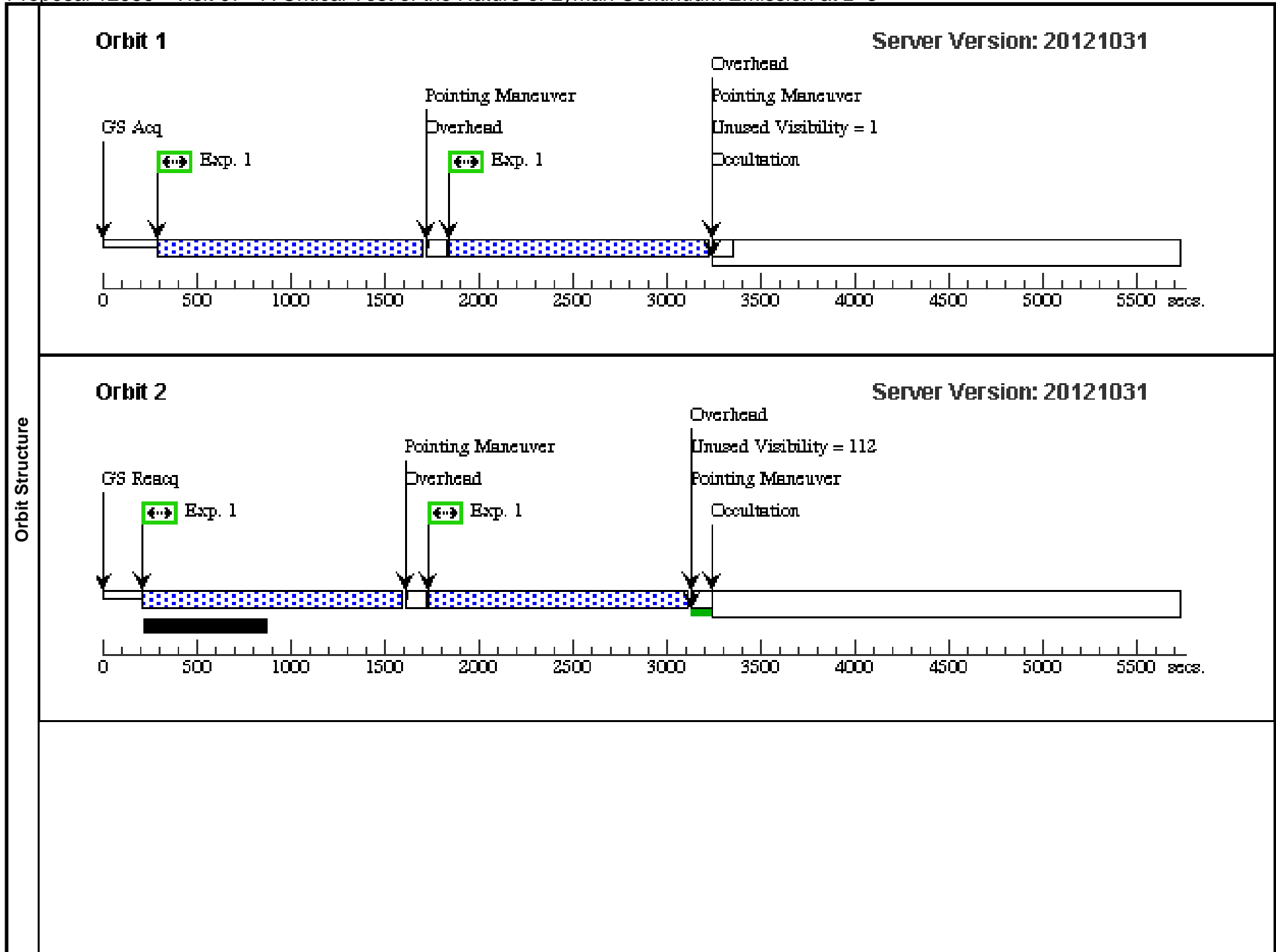




Proposal 12959 - Visit 07 - A Critical Test of the Nature of Lyman Continuum Emission at z~3

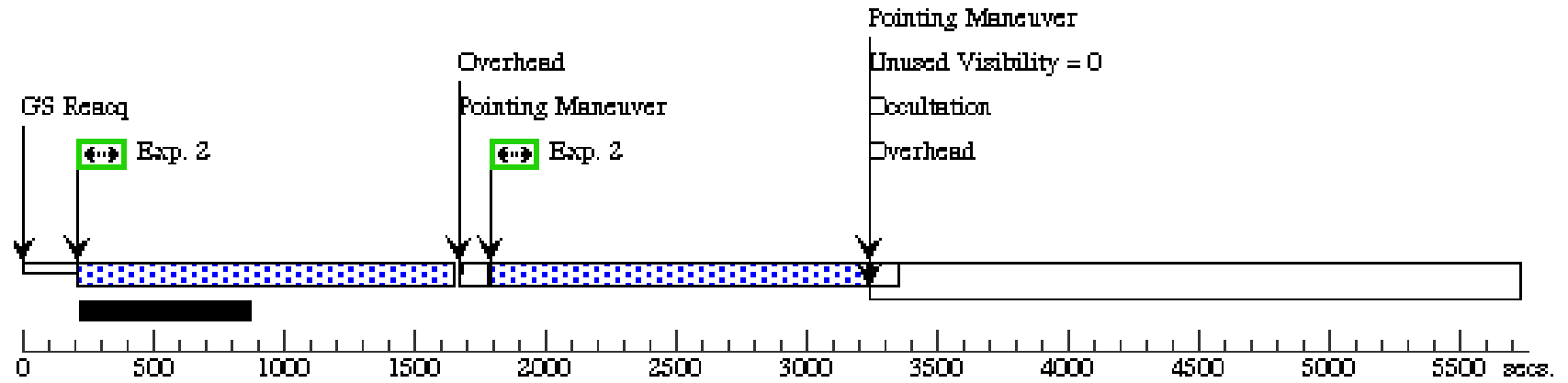
Wed Jan 16 02:06:32 GMT 2013

Visit	<b>Proposal 12959, Visit 07, scheduling</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS Special Requirements: ORIENT 5D TO 11 D; ORIENT 25D TO 33 D; ORIENT 90D TO 92 D; ORIENT 95D TO 119 D; ORIENT 123D TO 126 D; ORIENT 185D TO 193 D; ORIENT 196D TO 212 D; ORIENT 215D TO 215 D; ORIENT 272D TO 274 D; ORIENT 277D TO 298 D; ORIENT 301D TO 305 D; ORIENT 307D TO 309 D									
	#	Primary Pattern	Secondary Pattern	Exposures						
Patterns	(3)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false	(1), (2)						
	(5)	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	(3)						
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	Q1549-1-U	RA: 15 52 3.7600 (238.0156667d) Dec: +19 11 54.40 (19.19844d) Equinox: J2000		V=27+/-0.5	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(1) Q1549-1-U	WFC3/UVIS, ACCUM, UVIS-CENTER	F336W	FLASH=8; CR-SPLIT=NO		Pattern 3, Exps 1-1 in Visit 07 (3)	1384 Secs	
									[==>(Pattern 1)]	[1]
									[==>(Pattern 2)]	
									[==>(Pattern 3)]	[2]
									[==>(Pattern 4)]	
	2		(1) Q1549-1-U	WFC3/UVIS, ACCUM, UVIS-CENTER	F336W	FLASH=8; CR-SPLIT=NO	POS TARG 0.300,0.300	Pattern 3, Exps 2-2 in Visit 07 (3)	1440 Secs	
									[==>(Pattern 1)]	[3]
									[==>(Pattern 2)]	
								[==>(Pattern 3)]	[4]	
								[==>(Pattern 4)]		
3		(1) Q1549-1-U	WFC3/UVIS, ACCUM, UVIS-CENTER	F336W	FLASH=8; CR-SPLIT=NO	POS TARG -0.300,-0.300	Pattern 5, Exps 3-3 in Visit 07 (5)	1440 Secs		
								[==>(Pattern 1)]	[5]	
								[==>(Pattern 2)]		



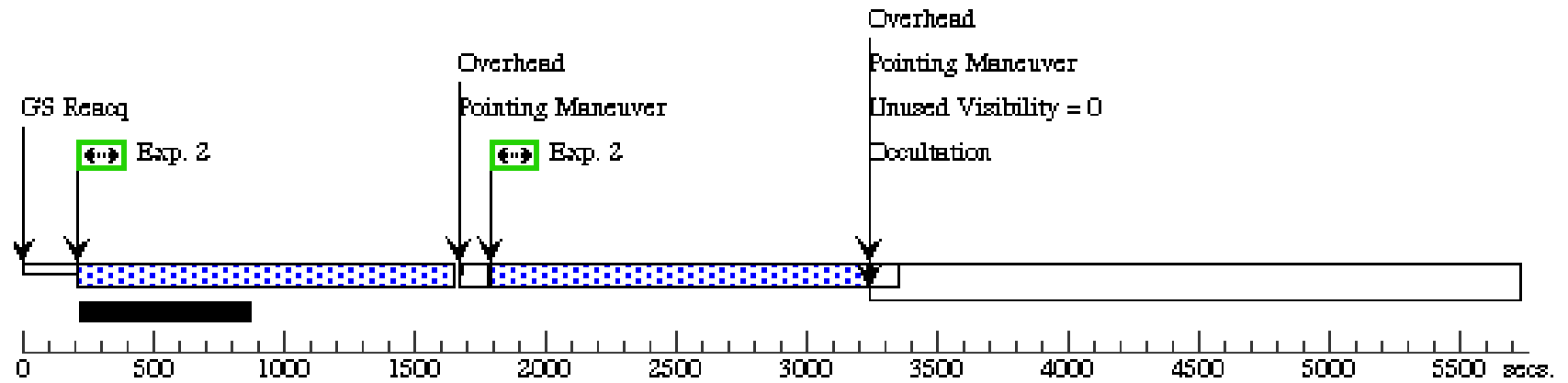
**Orbit 3**

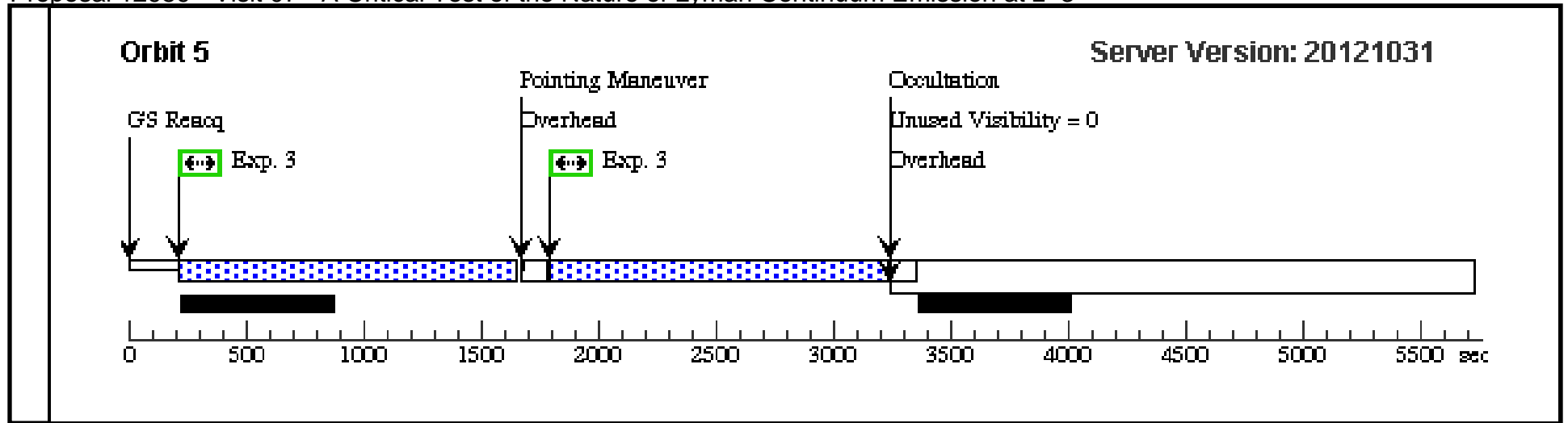
Server Version: 20121031



**Orbit 4**

Server Version: 20121031

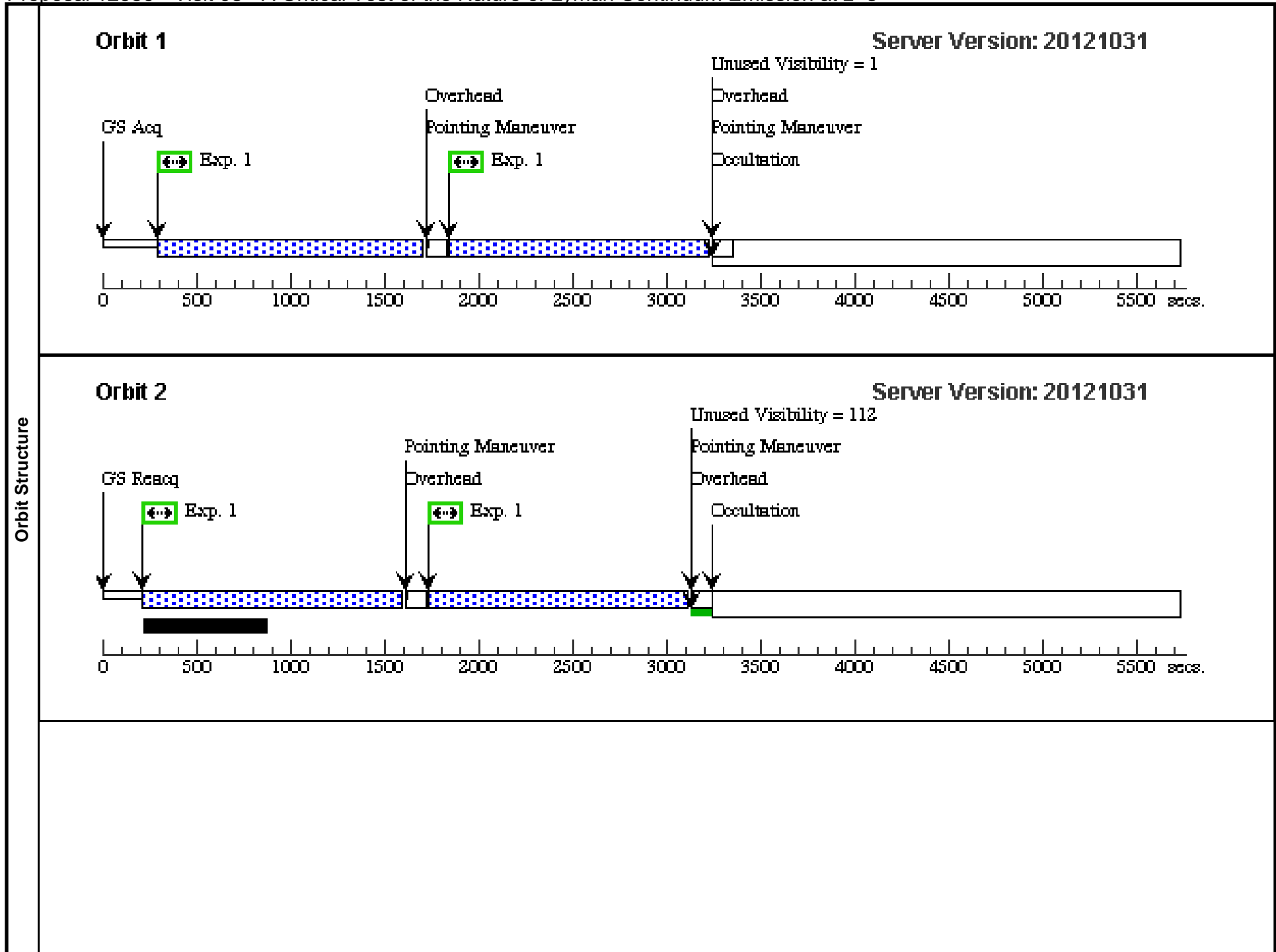




Proposal 12959 - Visit 08 - A Critical Test of the Nature of Lyman Continuum Emission at z~3

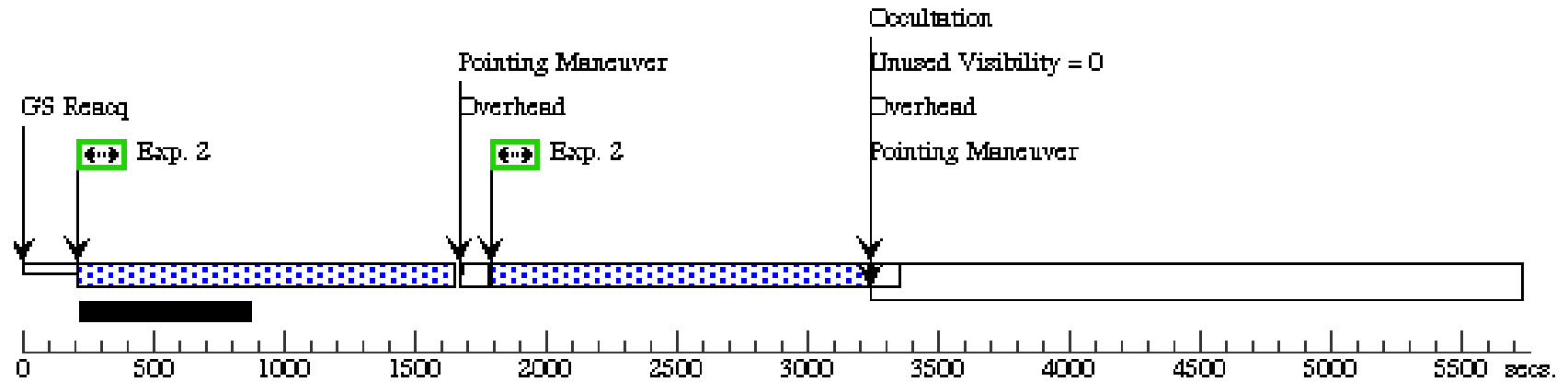
Wed Jan 16 02:06:36 GMT 2013

Visit	<b>Proposal 12959, Visit 08, scheduling</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS Special Requirements: ORIENT 0D TO 27 D; ORIENT 86D TO 94 D; ORIENT 101D TO 121 D; ORIENT 180D TO 207 D; ORIENT 265D TO 272 D; ORIENT 276D TO 279 D; ORIENT 283D TO 299 D									
	#	Primary Pattern	Secondary Pattern	Exposures						
Patterns	(3)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112 Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1), (2)						
	(5)	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		(3)						
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(2)	Q1549-2-U	RA: 15 51 49.8800 (237.9578333d) Dec: +19 10 20.13 (19.17226d) Equinox: J2000		V=27	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(2) Q1549-2-U	WFC3/UVIS, ACCUM, UVIS-CENTER	F336W	FLASH=8; CR-SPLIT=NO		Pattern 3, Exps 1-1 i n Visit 08 (3)	1384 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]
									[=>(Pattern 3)] [=>(Pattern 4)]	[2]
	2		(2) Q1549-2-U	WFC3/UVIS, ACCUM, UVIS-CENTER	F336W	FLASH=8; CR-SPLIT=NO	POS TARG 0.300,0.300	Pattern 3, Exps 2-2 i n Visit 08 (3)	1440 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[3]
									[=>(Pattern 3)] [=>(Pattern 4)]	[4]
	3		(2) Q1549-2-U	WFC3/UVIS, ACCUM, UVIS-CENTER	F336W	FLASH=8; CR-SPLIT=NO	POS TARG -0.300,-0.300	Pattern 5, Exps 3-3 i n Visit 08 (5)	1440 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[5]



**Orbit 3**

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**Orbit 4**

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