14254 - Accurate cosmography from gravitational time delays: 2.3% on H0 from deep WFC3 images of lensed quasars

Cycle: 23, Proposal Category: GO

(Availability Mode: AVAILABLE)

INVESTIGATORS

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VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) HE0047-1756	WFC3/UVIS	4	17-Jan-2017 21:02:17.0	yes
02	(2) SDSS0246-0825	WFC3/UVIS	4	17-Jan-2017 21:02:19.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
03	(2) SDSS0246-0825	WFC3/UVIS	4	17-Jan-2017 21:02:22.0	yes
04	(3) SDSS1206+4332	WFC3/IR	4	17-Jan-2017 21:02:25.0	yes
05	(4) HS2209+1914	WFC3/UVIS	4	17-Jan-2017 21:02:28.0	yes
06	(4) HS2209+1914	WFC3/UVIS	2	17-Jan-2017 21:02:30.0	yes
53	(2) SDSS0246-0825	WFC3/UVIS	4	17-Jan-2017 21:02:32.0	yes

26 Total Orbits Used

ABSTRACT

The combination of precise distance measurements at low redshift (z<1) with cosmic microwave background (CMB) data provides the most powerful constraints on the dark energy equation of state parameter w, spatial curvature, and neutrino physics. Our team has demonstrated that a single gravitational lens can be used to measure time-delay distances to 5% precision and accuracy, i.e. including systematic errors. This requires deep HST images - necessary to measure accurately the gravitational potential of the deflector galaxy - in addition to ground based determinations of the time-delay (from COSMOGRAIL), and the redshift and velocity dispersion of the deflector obtained at Keck and VLT. We propose to take a major step toward a 1% determination of the Hubble constant H0 independent of the local distance ladder and the CMB by imaging 4 carefully selected gravitational lens systems with WFC3. This proposal doubles the number of suitable systems for this analysis thus achieving 2.3% equivalent precision on H0. Combining time-delays with Planck or WMAP9 data yields
0.4% precision on flatness and <0.10 on w, independent of any other probe. As in our previous work, we will analyze each system independently and blindly, thus avoiding confirmation bias, and using the scatter between systems to test for unknown residual systematic uncertainties. In addition to its immediate deliverable result, this proposal will quadruple the number of doubly lensed quasars with deep images of the extended source. With hundreds of doubles to be discovered by upcoming surveys, detailed studies of doubles pave the way for a 1% determination of H0 based only on time-delays.

OBSERVING DESCRIPTION

We aim to map the surface brightness distribution of the lensed quasar host galaxy. Based on our experience in previous cycles where we have analyzed both near infrared and optical images of lensed quasars, we have concluded that the most crucial aspect is a good sampling of the stable PSF, provided that sufficiently high signal to noise ratio is available. The presence of structure in the lensed host galaxy, as in the case of RXJ1131

adds valuable information. For each lens we have thus considered the tradeoffs to minimize the request of observing time. This drives our decision to image 3 lenses in the optical (F814W) and one in the near IR (F160W; 1206+4332).

For UVIS, we use a four-point dither pattern to eliminate defects and improve the sampling of the PSF. For WFC3 we use an additional sub-pattern to further improve the characterization of the large pixels. In order to fully sample the dynamic range and avoid non linearities at the brightest pixels at the location of the lensed quasars, we will split each orbit into a short-short-long-long exposure sequence, at each of the different dither pattern positions. This can be done with minimal additional overhead as we will dump the buffer during the subsequent long exposure.

Visit

Proposal 14254, HE0047 (01), completed Wed Jan 18 02:02:33 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	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		(1-3)

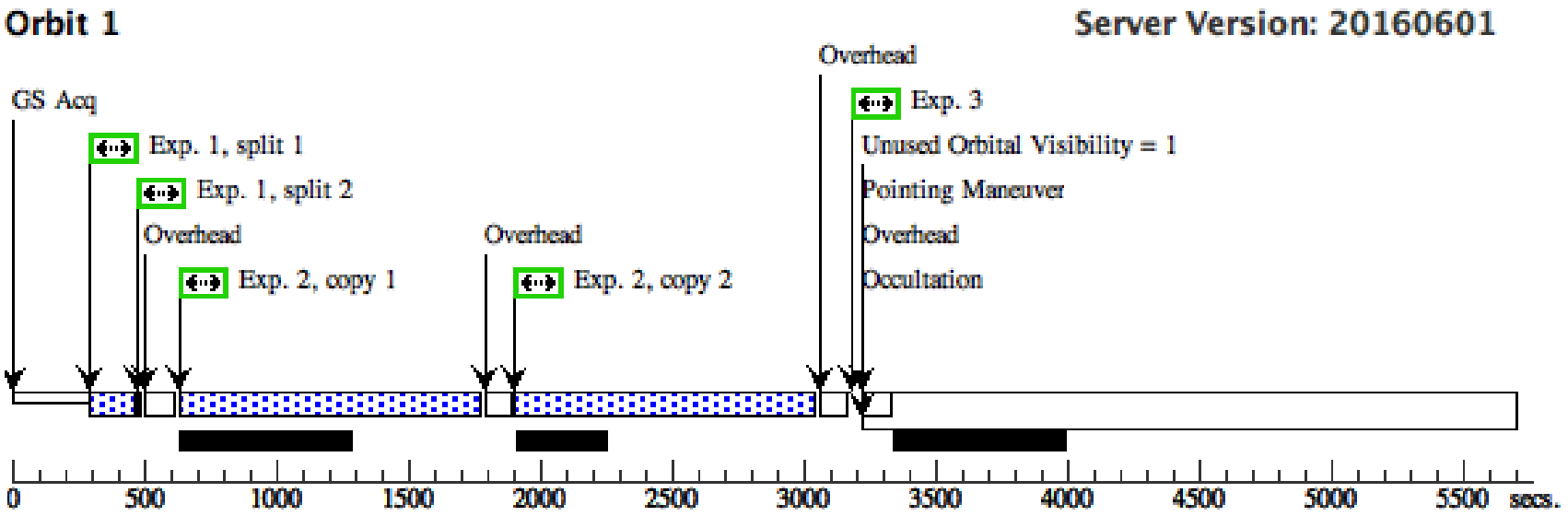
Fixed Targets

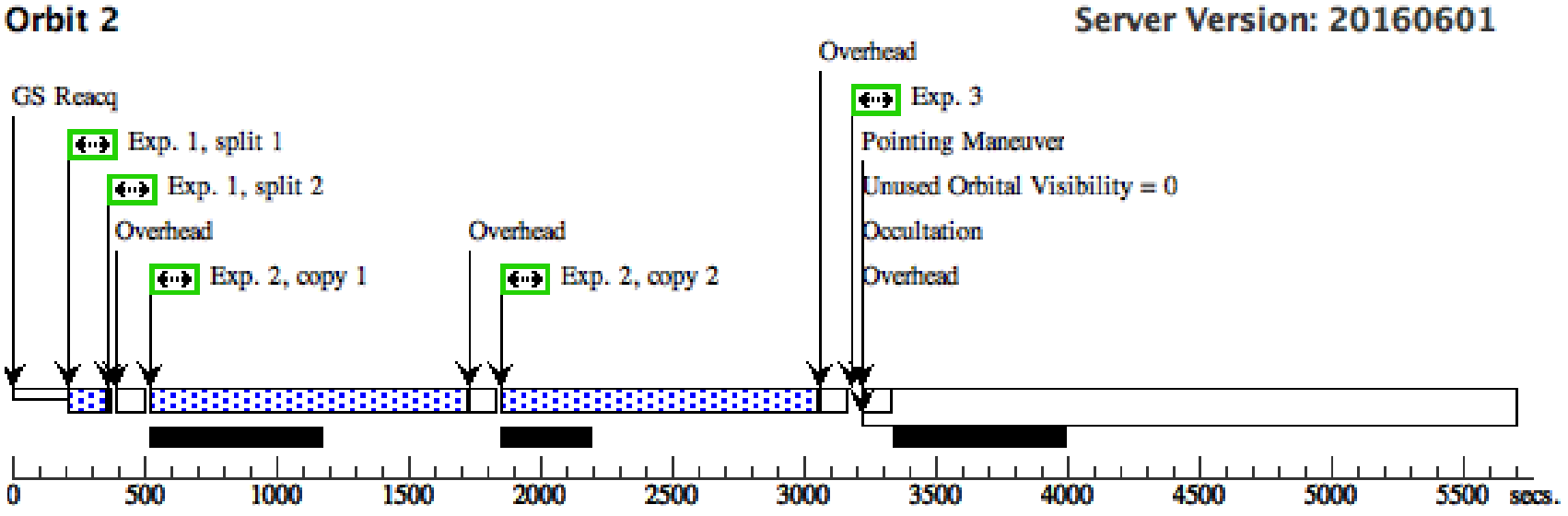
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HE0047-1756	RA: 00 50 27.8000 (12.6158333d) Dec: -17 40 8.80 (-17.66911d) Equinox: J2000		V=17	Reference Frame: SDSS

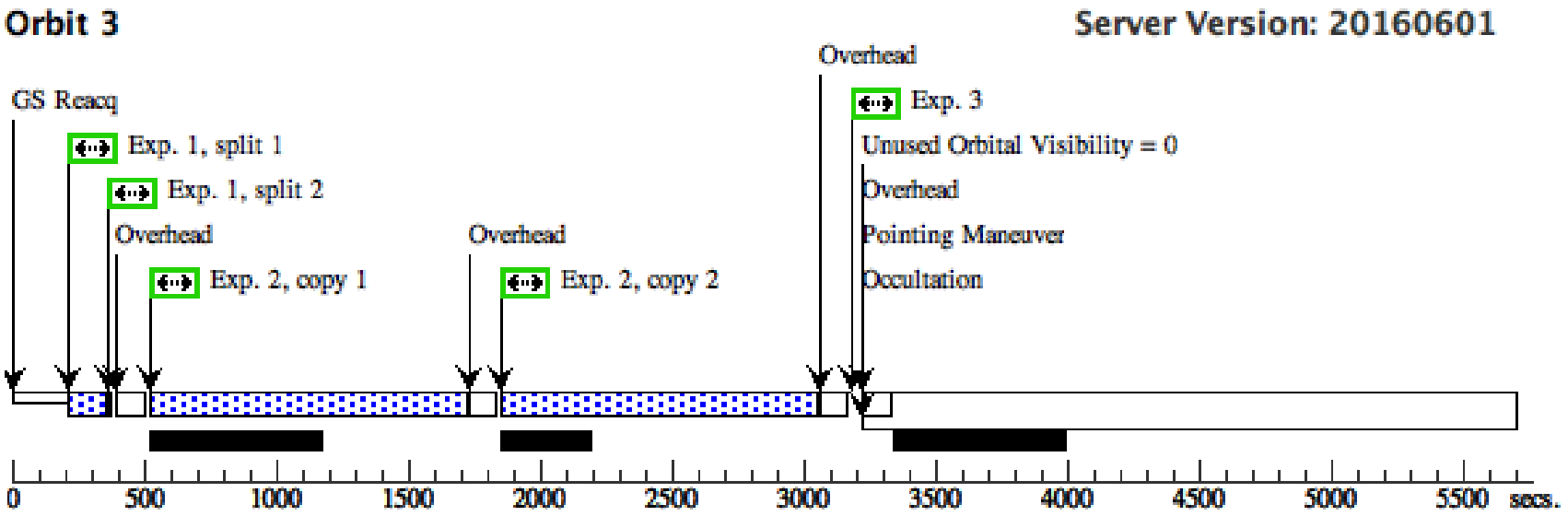
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) HE0047-1756	WFC3/UVIS, ACCUM, UVIS1	F814W	CR-SPLIT=2; FLASH=12	GS ACQ SCENARIO BASE1B3	Pattern 2, Exps 1-3 in HE0047 (01) (2)	25 Secs (100 Secs)	
								[==>(Pattern 1, Split 1)]	***[1]***
								[==>(Pattern 1, Split 2)]	
								[==>(Pattern 2, Split 1)]	***[2]***
								[==>(Pattern 2, Split 2)]	
								[==>(Pattern 3, Split 1)]	***[3]***
								[==>(Pattern 3, Split 2)]	
								[==>(Pattern 4, Split 1)]	***[4]***
								[==>(Pattern 4, Split 2)]	
2		(1) HE0047-1756	WFC3/UVIS, ACCUM, UVIS1	F814W			Pattern 2, Exps 1-3 in HE0047 (01) (2)	1221 Secs X 2 (9512 Secs)	
								[==>1147.0 Secs (Pattern 1, Copy 1)]	***[1]***
								[==>1147.0 Secs (Pattern 1, Copy 2)]	
								[==>1203.0 Secs (Pattern 2, Copy 1)]	***[2]***
								[==>1203.0 Secs (Pattern 2, Copy 2)]	
								[==>1203.0 Secs (Pattern 3, Copy 1)]	***[3]***
								[==>1203.0 Secs (Pattern 3, Copy 2)]	
								[==>1203.0 Secs (Pattern 4, Copy 1)]	***[4]***
								[==>1203.0 Secs (Pattern 4, Copy 2)]	
3		(1) HE0047-1756	WFC3/UVIS, ACCUM, UVIS1	F814W	FLASH=12		Pattern 2, Exps 1-3 in HE0047 (01) (2)	25 Secs (100 Secs)	
								[==>(Pattern 1)]	***[1]***
								[==>(Pattern 2)]	***[2]***
								[==>(Pattern 3)]	***[3]***
								[==>(Pattern 4)]	***[4]***

Orbit Structure



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GS Reacq
Exp. 1, split 1
Exp. 1, split 2
Overhead
Exp. 2, copy 1
Overhead
Exp. 2, copy 2
Overhead
Exp. 3
Unused Orbital Visibility = 0
Overhead
Pointing Maneuver
Occultation
0
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1000
1500
2000
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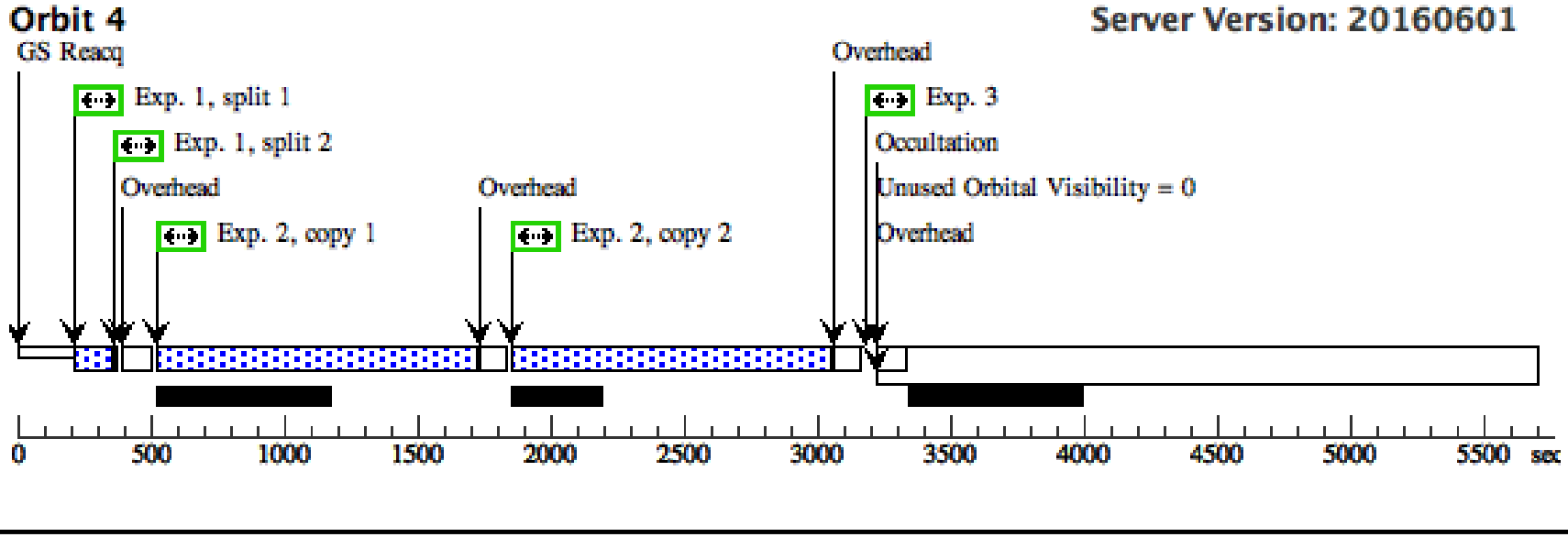
3000
3500
4000
4500
5000
5500
secs.


Orbit 4
Server Version: 20160601
GS Reacq
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Exp. 1, split 2
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Exp. 2, copy 1
Overhead
Exp. 2, copy 2
Overhead
Exp. 3
Occultation
Unused Orbital Visibility = 0
Overhead
0
500
1000
1500
2000
2500
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3500
4000
4500
5000
5500
sec

Visit

Proposal 14254, SDSSJ0246 - 1 (02), completed Wed Jan 18 02:02:33 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	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		(1-3)

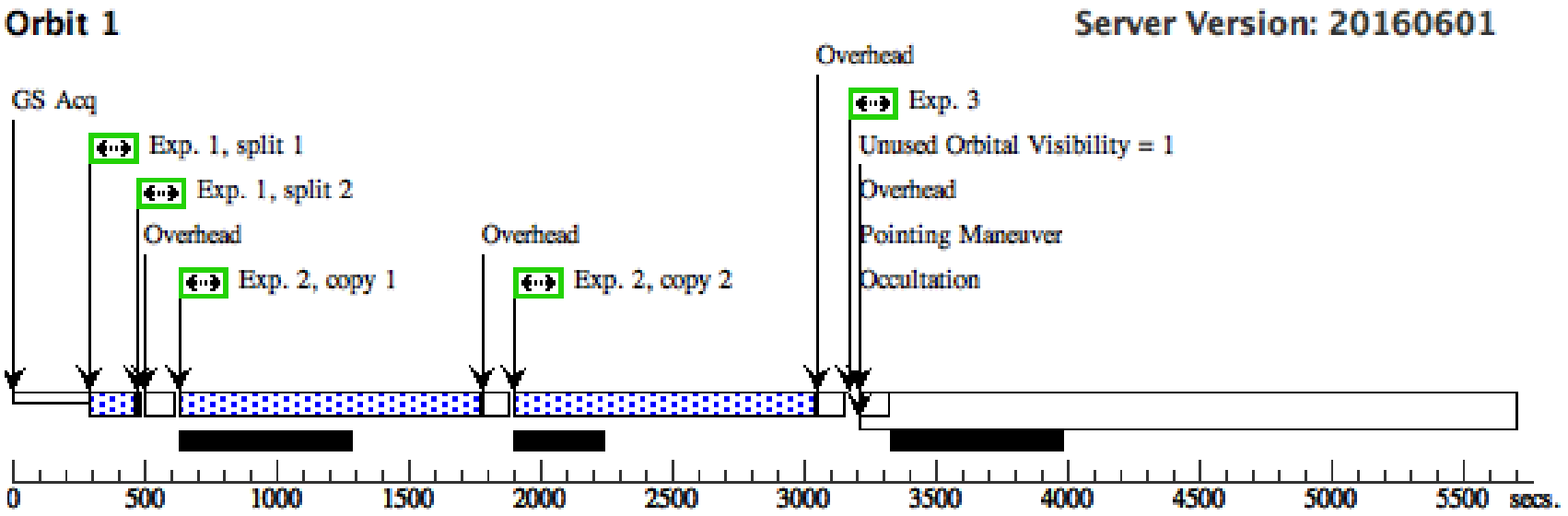
Fixed Targets

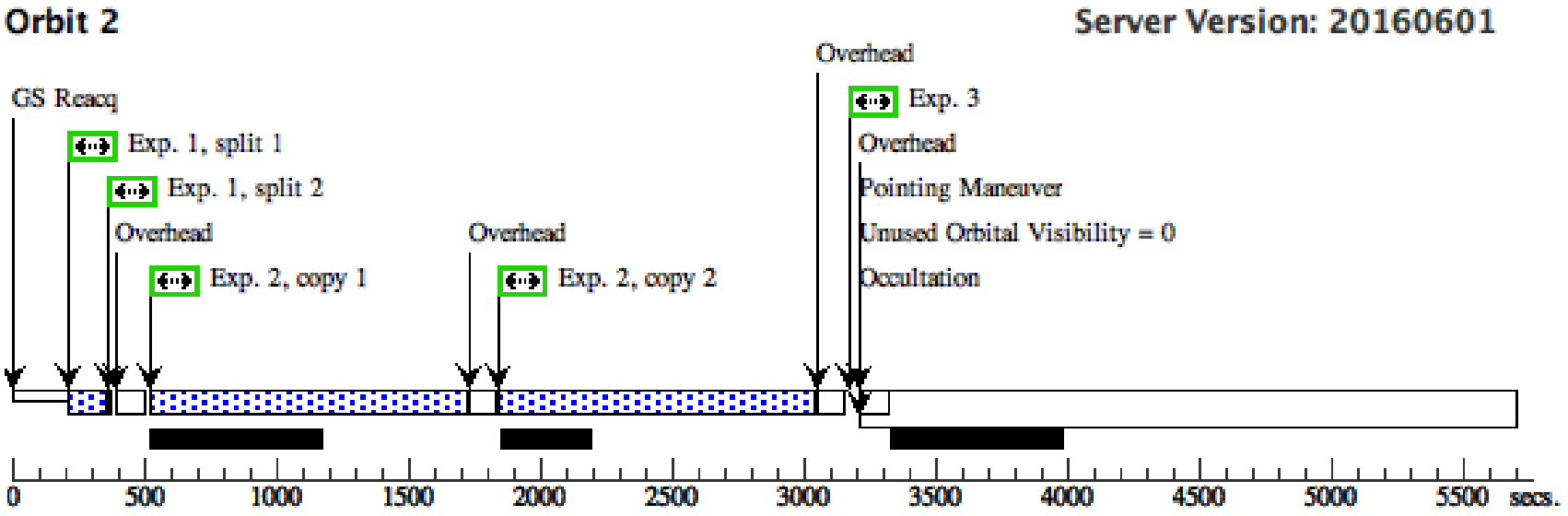
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	SDSS0246-0825	RA: 02 46 34.1100 (41.6421250d) Dec: -08 25 36.20 (-8.42672d) Equinox: J2000		V=19	Reference Frame: SDSS

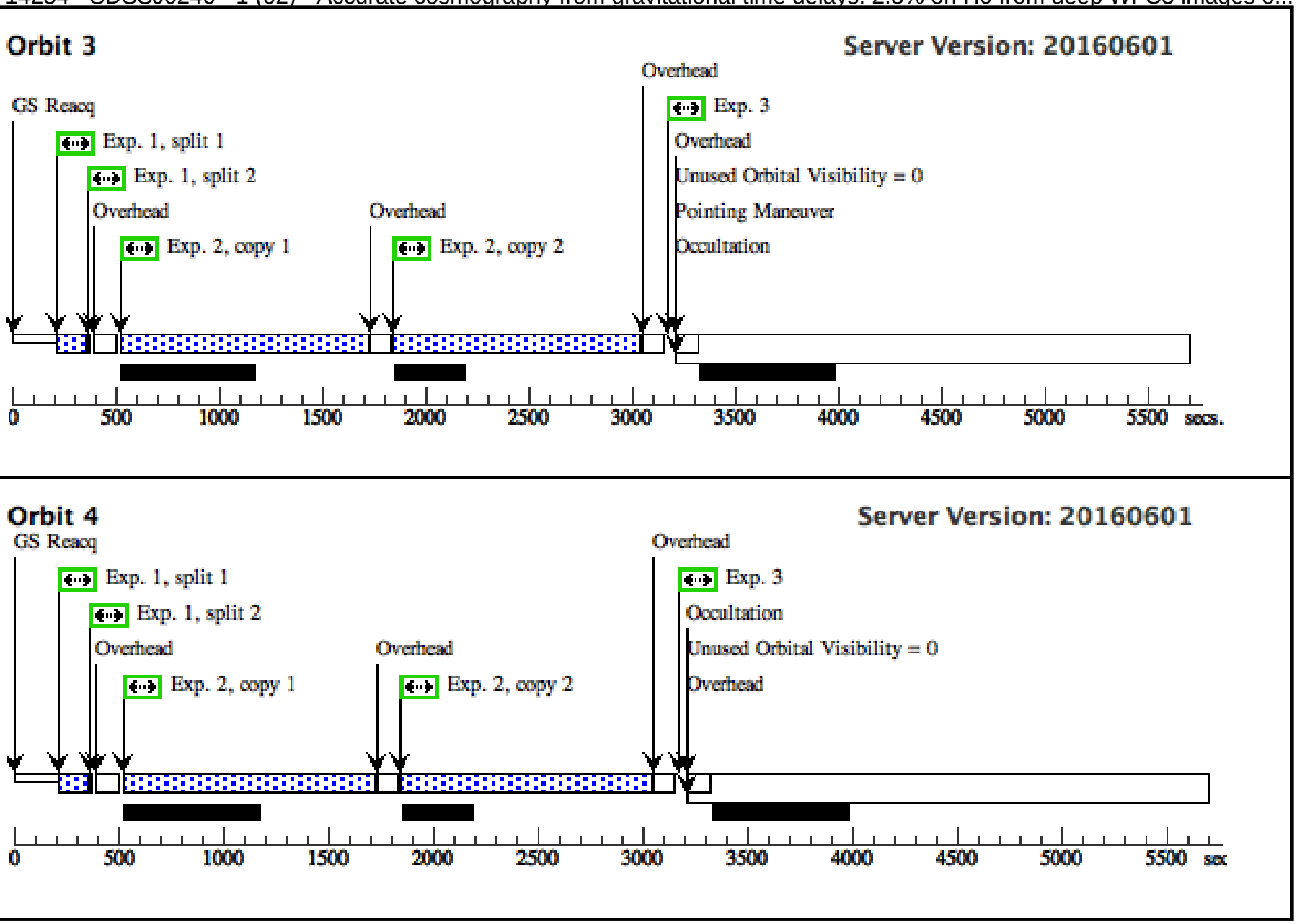
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(2) SDSS0246-0825	WFC3/UVIS, ACCUM, UVIS1	F814W	CR-SPLIT=2; FLASH=12		Pattern 2, Exps 1-3 in SDSSJ0246 - 1 (02) (2)	25 Secs (100 Secs)	
								[==>(Pattern 1, Split 1)] *[==>(Pattern 1, Split 2)]*	***[1]***
								[==>(Pattern 2, Split 1)] *[==>(Pattern 2, Split 2)]*	***[2]***
								[==>(Pattern 3, Split 1)] *[==>(Pattern 3, Split 2)]*	***[3]***
								[==>(Pattern 4, Split 1)] *[==>(Pattern 4, Split 2)]*	***[4]***
2		(2) SDSS0246-0825	WFC3/UVIS, ACCUM, UVIS1	F814W			Pattern 2, Exps 1-3 in SDSSJ0246 - 1 (02) (2)	1221 Secs X 2 (9480 Secs)	
								[==>1143.0 Secs (Pattern 1, Copy 1)] *[==>1143.0 Secs (Pattern 1, Copy 2)]*	***[1]***
								[==>1199.0 Secs (Pattern 2, Copy 1)] *[==>1199.0 Secs (Pattern 2, Copy 2)]*	***[2]***
								[==>1199.0 Secs (Pattern 3, Copy 1)] *[==>1199.0 Secs (Pattern 3, Copy 2)]*	***[3]***
								[==>1199.0 Secs (Pattern 4, Copy 1)] *[==>1199.0 Secs (Pattern 4, Copy 2)]*	***[4]***
3		(2) SDSS0246-0825	WFC3/UVIS, ACCUM, UVIS1	F814W	FLASH=12		Pattern 2, Exps 1-3 in SDSSJ0246 - 1 (02) (2)	25 Secs (100 Secs)	
								[==>(Pattern 1)]	***[1]***
								[==>(Pattern 2)]	***[2]***
								[==>(Pattern 3)]	***[3]***
								[==>(Pattern 4)]	***[4]***

Orbit Structure



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Exp. 1, split 2
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Exp. 2, copy 1
Overhead
Exp. 2, copy 2
Overhead
Exp. 3
Overhead
Unused Orbital Visibility = 0
Pointing Maneuver
Occultation
0
500
1000
1500
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secs.
Orbit 4
Server Version: 20160601
GS Reacq
Exp. 1, split 1
Exp. 1, split 2
Overhead
Exp. 2, copy 1
Overhead
Exp. 2, copy 2
Overhead
Exp. 3
Occultation
Unused Orbital Visibility = 0
Overhead
0
500
1000
1500
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3000
3500
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4500
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5500
sec

Visit

Proposal 14254, SDSSJ0246 - 2 (03), completed Wed Jan 18 02:02:34 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	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		(1-3)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	SDSS0246-0825	RA: 02 46 34.1100 (41.6421250d) Dec: -08 25 36.20 (-8.42672d) Equinox: J2000		V=19	Reference Frame: SDSS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(2) SDSS0246-0825	WFC3/UVIS, ACCUM, UVIS1	F814W	CR-SPLIT=2; FLASH=12		Pattern 2, Exps 1-3 in SDSSJ0246 - 2 (03) (2)	25 Secs (100 Secs)	
								[==>(Pattern 1, Split 1)] *[==>(Pattern 1, Split 2)]*	***[1]***
								[==>(Pattern 2, Split 1)] *[==>(Pattern 2, Split 2)]*	***[2]***
								[==>(Pattern 3, Split 1)] *[==>(Pattern 3, Split 2)]*	***[3]***
								[==>(Pattern 4, Split 1)] *[==>(Pattern 4, Split 2)]*	***[4]***
2		(2) SDSS0246-0825	WFC3/UVIS, ACCUM, UVIS1	F814W			Pattern 2, Exps 1-3 in SDSSJ0246 - 2 (03) (2)	1221 Secs X 2 (9480 Secs)	
								[==>1143.0 Secs (Pattern 1, Copy 1)] *[==>1143.0 Secs (Pattern 1, Copy 2)]*	***[1]***
								[==>1199.0 Secs (Pattern 2, Copy 1)] *[==>1199.0 Secs (Pattern 2, Copy 2)]*	***[2]***
								[==>1199.0 Secs (Pattern 3, Copy 1)] *[==>1199.0 Secs (Pattern 3, Copy 2)]*	***[3]***
								[==>1199.0 Secs (Pattern 4, Copy 1)] *[==>1199.0 Secs (Pattern 4, Copy 2)]*	***[4]***
3		(2) SDSS0246-0825	WFC3/UVIS, ACCUM, UVIS1	F814W	FLASH=12		Pattern 2, Exps 1-3 in SDSSJ0246 - 2 (03) (2)	25 Secs (100 Secs)	
								[==>(Pattern 1)]	***[1]***
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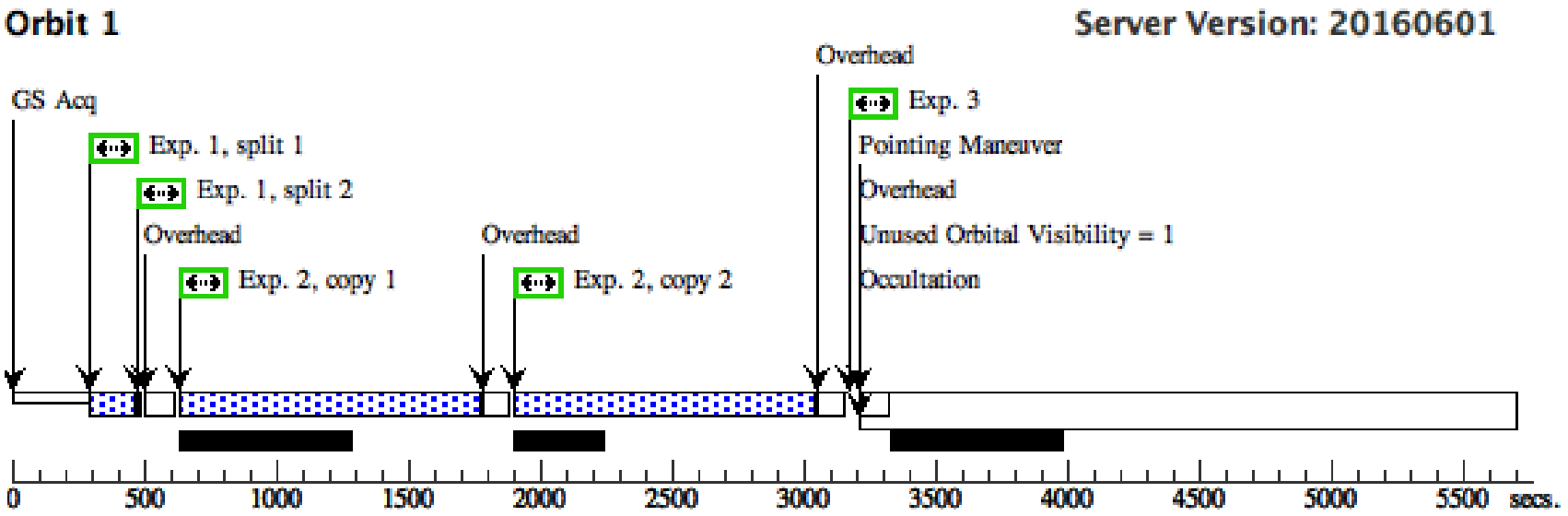
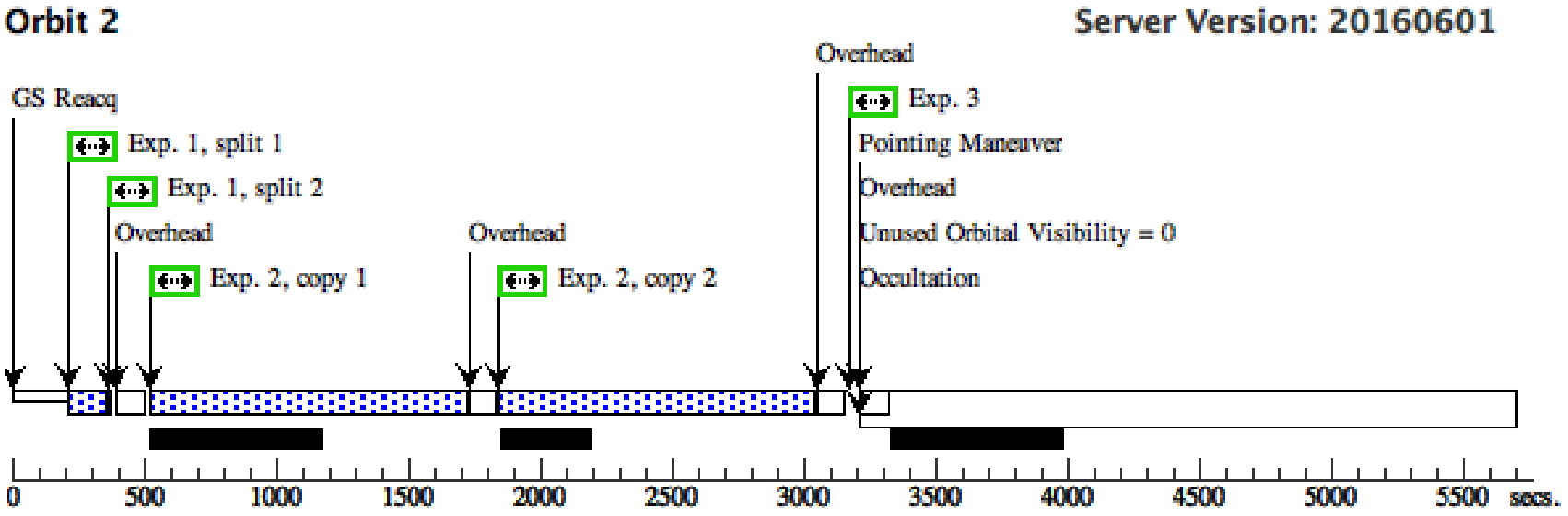
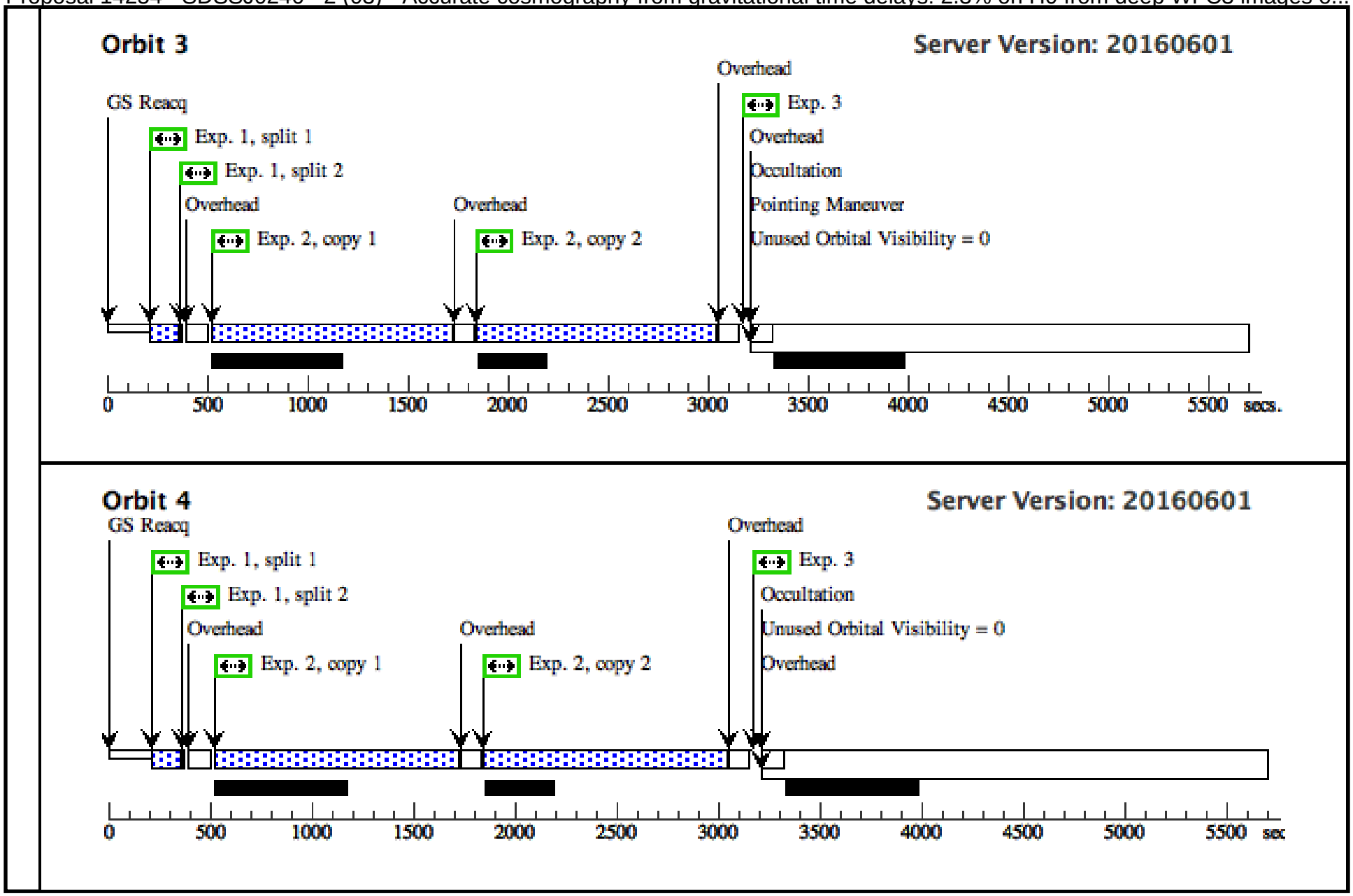
								[==>(Pattern 4)]	***[4]***

Orbit Structure



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GS Reacq
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Exp. 1, split 2
Overhead
Exp. 2, copy 1
Overhead
Exp. 2, copy 2
Overhead
Exp. 3
Overhead
Occultation
Pointing Maneuver
Unused Orbital Visibility = 0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
secs.
Orbit 4
Server Version: 20160601
GS Reacq
Exp. 1, split 1
Exp. 1, split 2
Overhead
Exp. 2, copy 1
Overhead
Exp. 2, copy 2
Overhead
Exp. 3
Occultation
Unused Orbital Visibility = 0
Overhead
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 14254, SDSSJ1206 (04), completed Wed Jan 18 02:02:34 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: SCHED 100%

Patterns

#	Primary Pattern		Secondary Pattern		Exposures
(1)	Pattern Type=LINE	Coordinate Frame=POS-TARG	Pattern Type=BOX	Coordinate Frame=POS-TARG	(1-3)
	Purpose=DITHER	Pattern Orientation=138.212	Purpose=DITHER	Pattern Orientation=198.528	
	Number Of Points=2	Angle Between Sides=	Number Of Points=4	Angle Between Sides=74.653	
	Point Spacing=9.132	Center Pattern=false	Point Spacing=7.431	Center Pattern=false	
	Line Spacing=		Line Spacing=4.740		

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	SDSS1206+4332	RA: 12 06 29.6500 (181.6235417d)		V=20	Reference Frame: SDSS
		Dec: +43 32 17.60 (43.53822d)			
		Equinox: J2000			

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	shortR30	(3) SDSS1206+4332	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=10; SAMP-SEQ=RAPID		Pattern 1, Exps 1-3 in SDSSJ1206 (04) (1)	29.32291 Secs X 2 (469.167 Secs)	
								[==>(Pattern 1,1, Copy 1)]	***[1]***
								[==>(Pattern 1,1, Copy 2)]	
								[==>(Pattern 1,2, Copy 1)]	
								[==>(Pattern 1,2, Copy 2)]	
								[==>(Pattern 1,3, Copy 1)]	***[2]***
								[==>(Pattern 1,3, Copy 2)]	
								[==>(Pattern 1,4, Copy 1)]	
								[==>(Pattern 1,4, Copy 2)]	
								[==>(Pattern 2,1, Copy 1)]	***[3]***
								[==>(Pattern 2,1, Copy 2)]	
								[==>(Pattern 2,2, Copy 1)]	
								[==>(Pattern 2,2, Copy 2)]	
								[==>(Pattern 2,3, Copy 1)]	***[4]***
								[==>(Pattern 2,3, Copy 2)]	
								[==>(Pattern 2,4, Copy 1)]	
								[==>(Pattern 2,4, Copy 2)]	
2	long700	(3) SDSS1206+4332	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=12; SAMP-SEQ=STEP100		Pattern 1, Exps 1-3 in SDSSJ1206 (04) (1)	599.232292 Secs (4793.858 Secs)	
								[==>(Pattern 1,1)]	***[1]***
								[==>(Pattern 1,2)]	
								[==>(Pattern 1,3)]	***[2]***
								[==>(Pattern 1,4)]	
								[==>(Pattern 2,1)]	***[3]***
								[==>(Pattern 2,2)]	
								[==>(Pattern 2,3)]	***[4]***
								[==>(Pattern 2,4)]	
3	long400	(3) SDSS1206+4332	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=13; SAMP-SEQ=STEP50		Pattern 1, Exps 1-3 in SDSSJ1206 (04) (1)	399.233383 Secs (3193.867 Secs)	
								[==>(Pattern 1,1)]	***[1]***
								[==>(Pattern 1,2)]	
								[==>(Pattern 1,3)]	***[2]***
								[==>(Pattern 1,4)]	
								[==>(Pattern 2,1)]	***[3]***
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								[==>(Pattern 2,3)]	***[4]***
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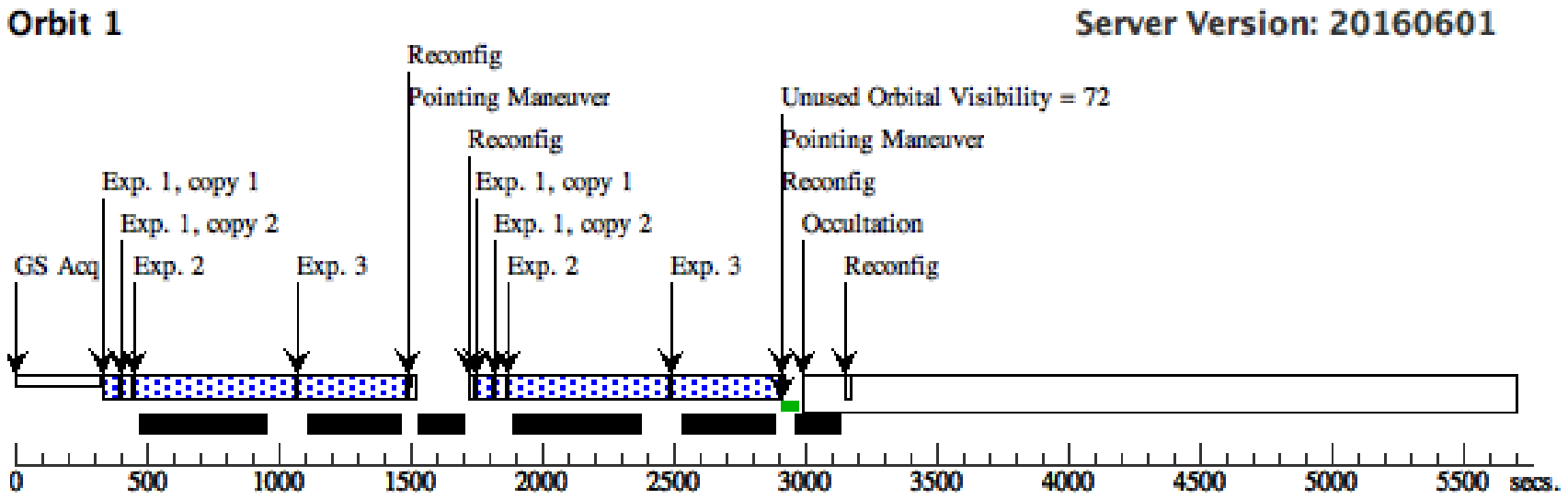
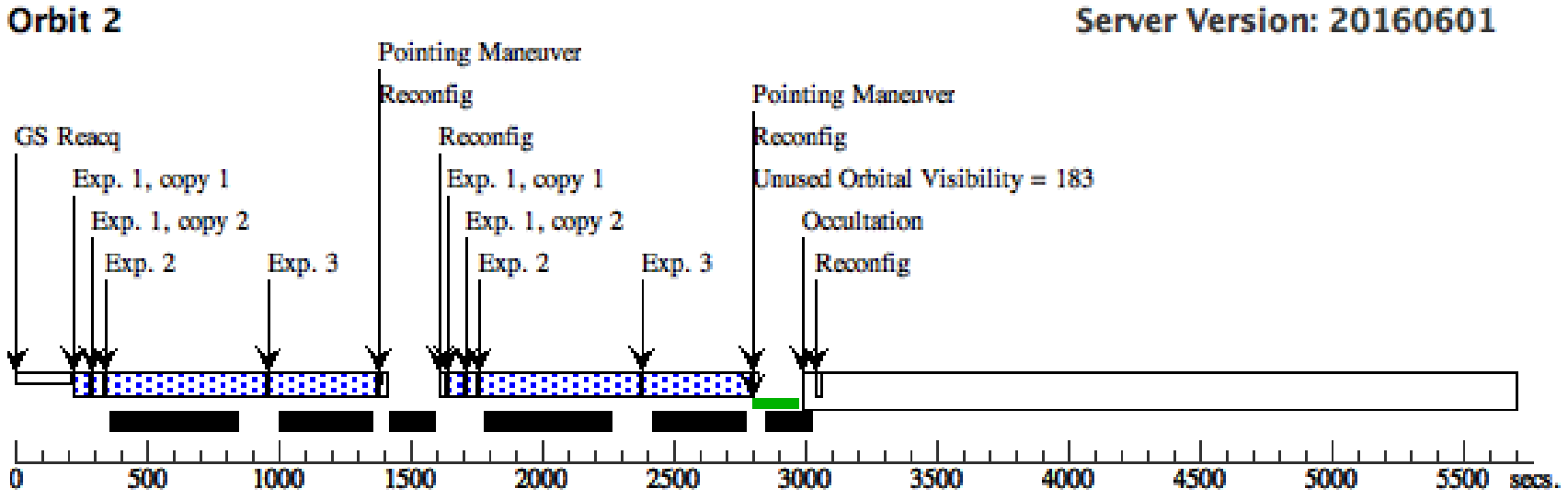
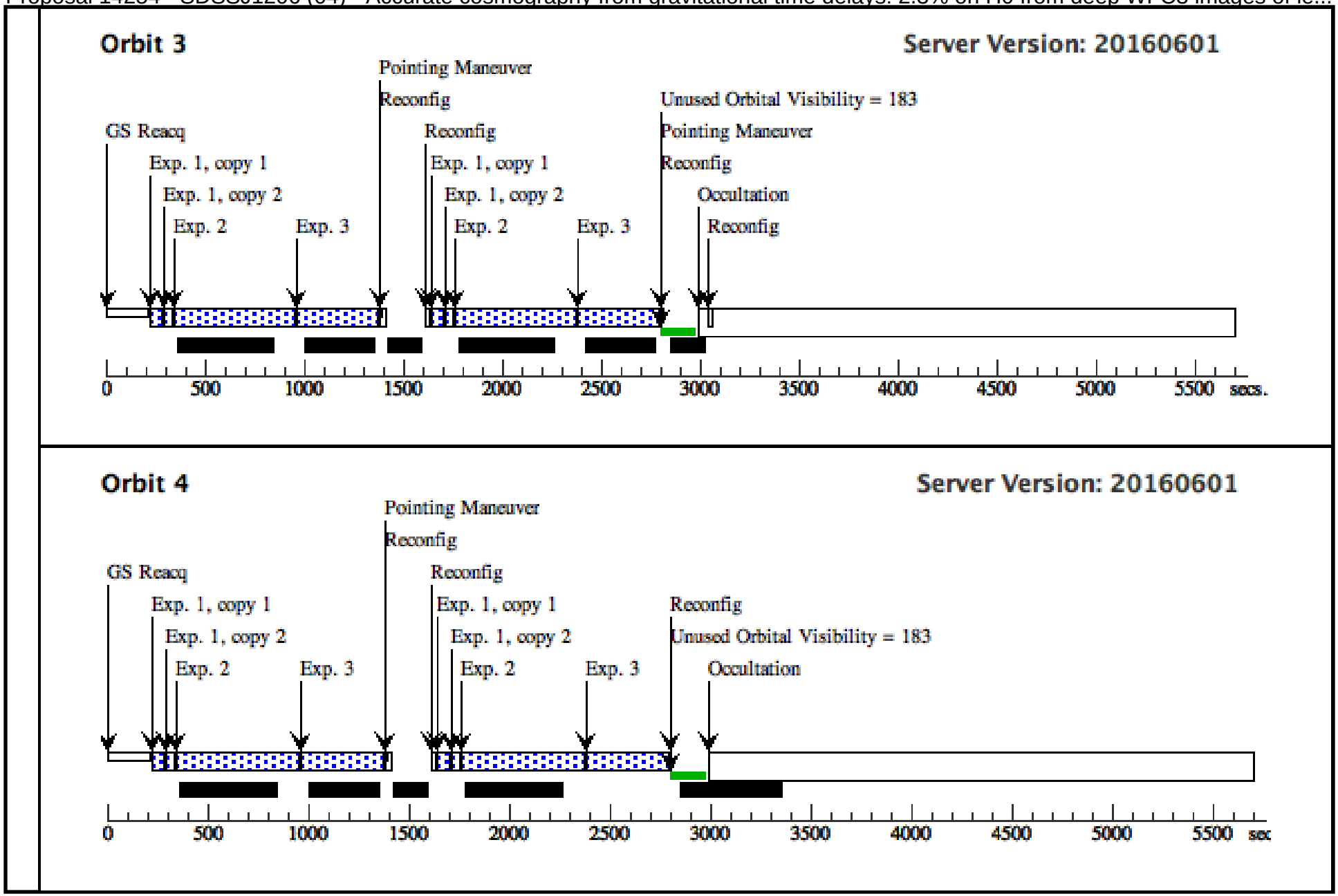
Orbit Structure



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Pointing Maneuver
Reconfig
Unused Orbital Visibility = 183
GS Reacq
Reconfig
Pointing Maneuver
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Exp. 1, copy 1
Reconfig
Exp. 1, copy 2
Exp. 1, copy 2
Occultation
Exp. 2
Exp. 3
Exp. 2
Exp. 3
Reconfig
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
secs.
Orbit 4
Server Version: 20160601
Pointing Maneuver
Reconfig
GS Reacq
Reconfig
Reconfig
Exp. 1, copy 1
Exp. 1, copy 1
Unused Orbital Visibility = 183
Exp. 1, copy 2
Exp. 1, copy 2
Exp. 2
Exp. 3
Exp. 2
Exp. 3
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 14254, HS2209 (05), completed Wed Jan 18 02:02:34 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	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		(1-3)

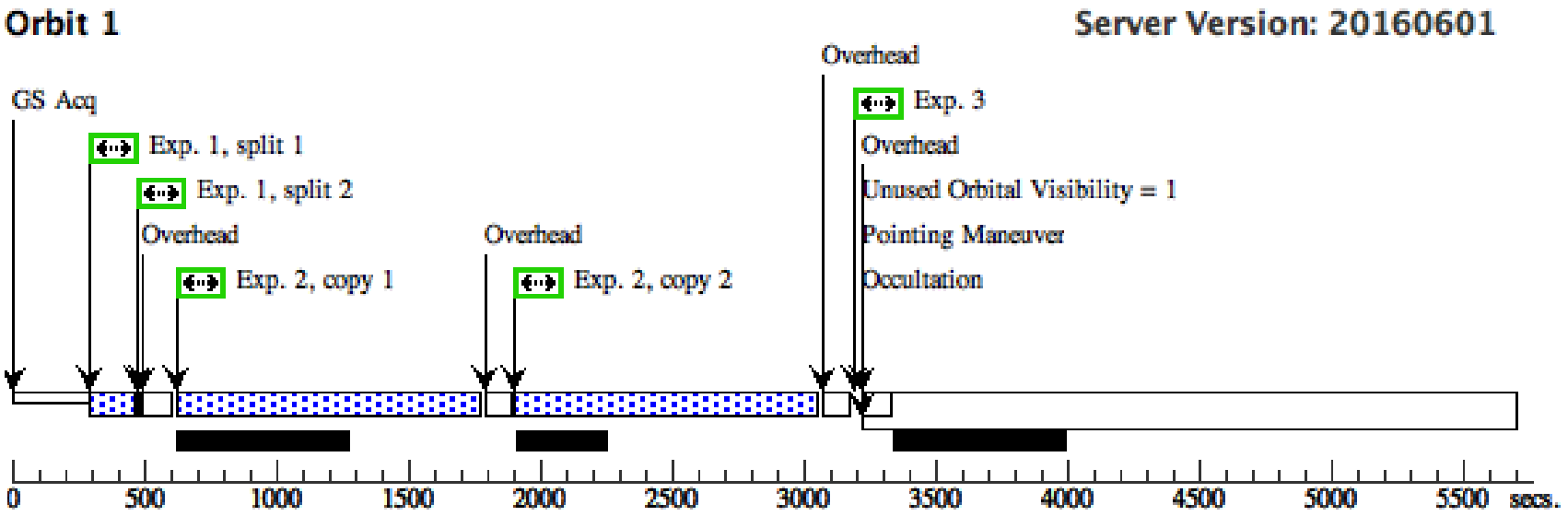
Fixed Targets

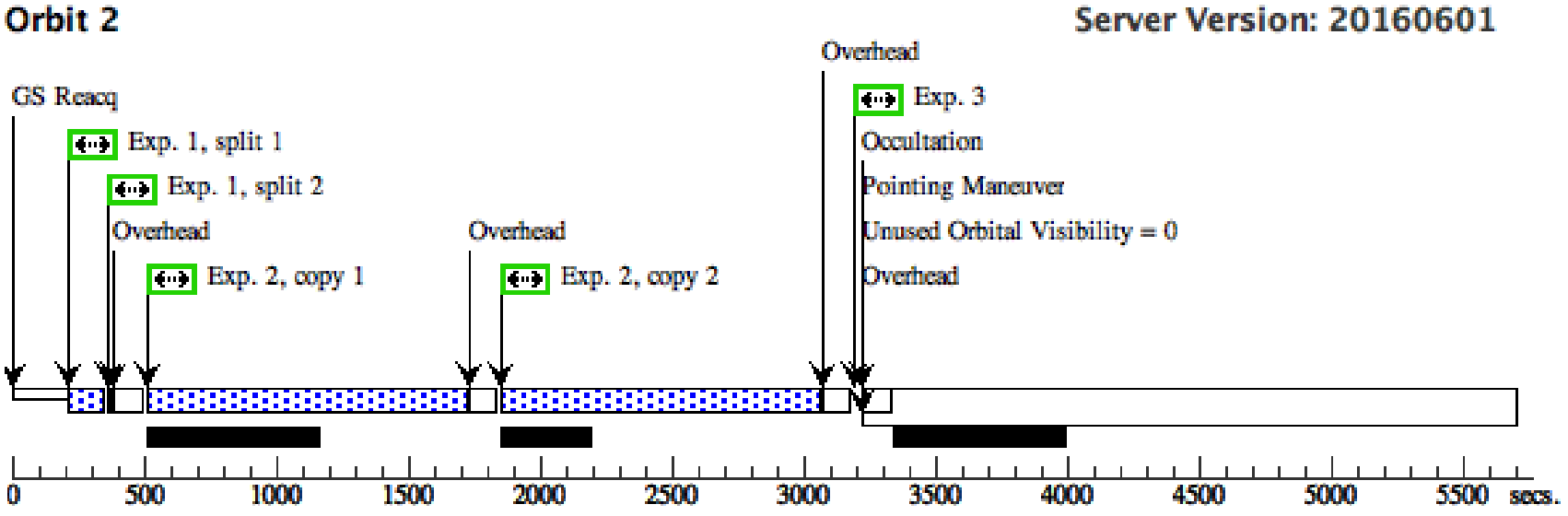
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	HS2209+1914	RA: 22 11 30.3000 (332.8762500d) Dec: +19 29 12.00 (19.48667d) Equinox: J2000		V=20	Reference Frame: SDSS

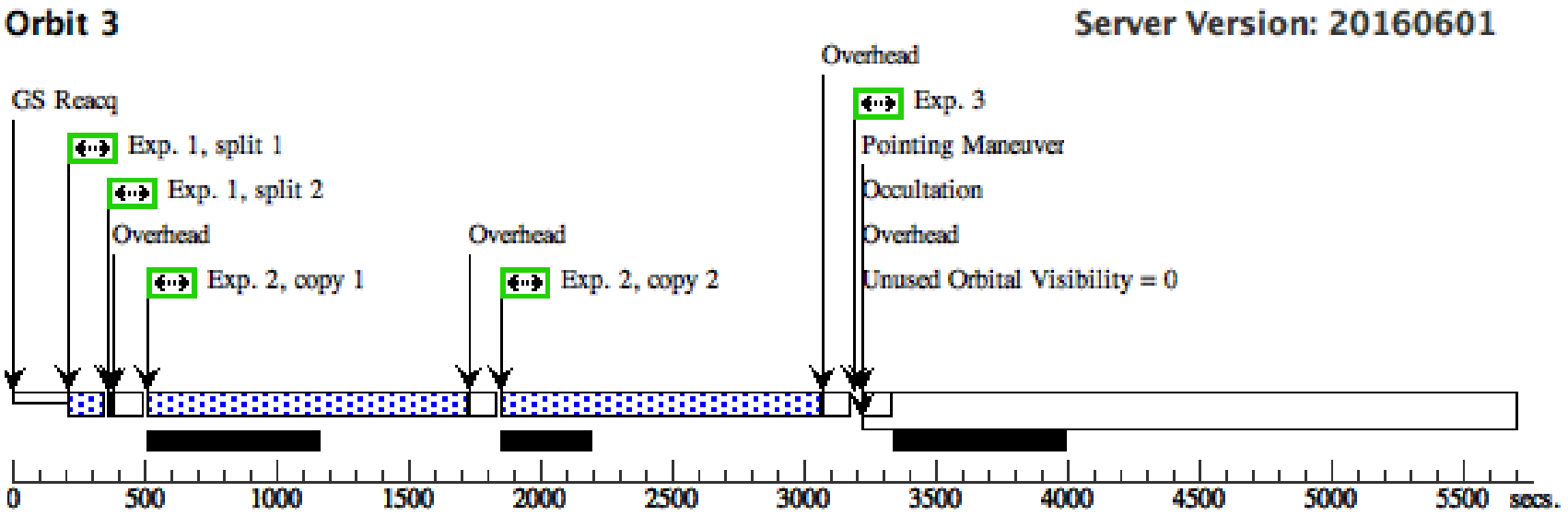
Exposures

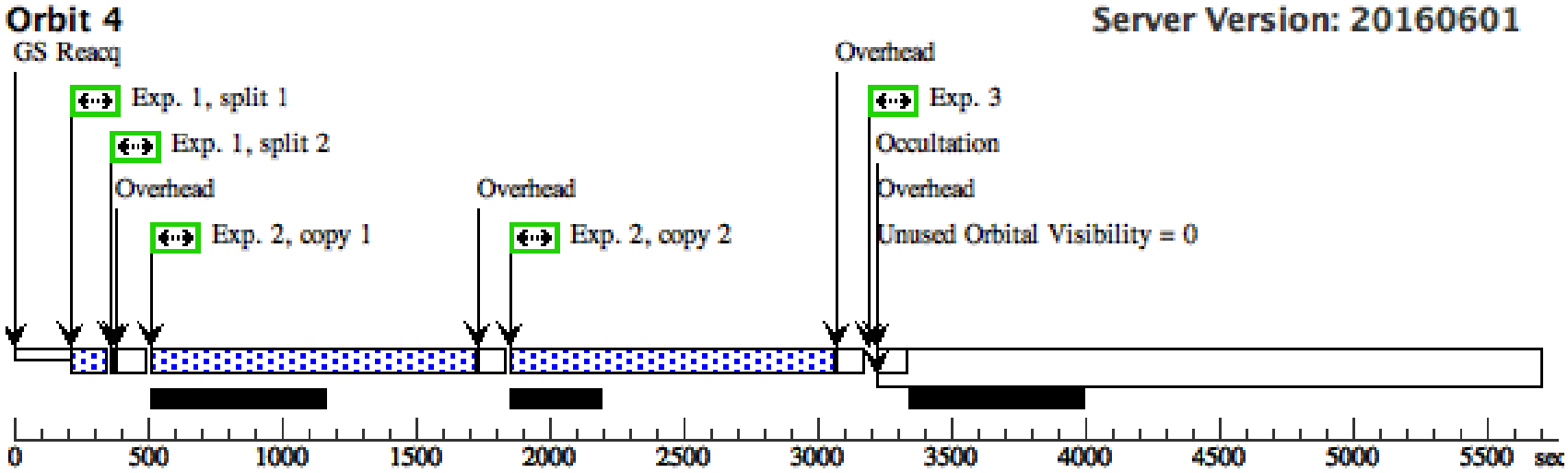
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(4) HS2209+1914	WFC3/UVIS, ACCUM, UVIS1	F814W	CR-SPLIT=2; FLASH=12; BLADE=A		Pattern 2, Exps 1-3 in HS2209 (05) (2)	13 Secs (52 Secs)	
								[==>(Pattern 1, Split 1)] *[==>(Pattern 1, Split 2)]*	***[1]***
								[==>(Pattern 2, Split 1)] *[==>(Pattern 2, Split 2)]*	***[2]***
								[==>(Pattern 3, Split 1)] *[==>(Pattern 3, Split 2)]*	***[3]***
								[==>(Pattern 4, Split 1)] *[==>(Pattern 4, Split 2)]*	***[4]***
2		(4) HS2209+1914	WFC3/UVIS, ACCUM, UVIS1	F814W			Pattern 2, Exps 1-3 in HS2209 (05) (2)	1221 Secs X 2 (9592 Secs)	
								[==>1157.0 Secs (Pattern 1, Copy 1)] *[==>1157.0 Secs (Pattern 1, Copy 2)]*	***[1]***
								[==>1213.0 Secs (Pattern 2, Copy 1)] *[==>1213.0 Secs (Pattern 2, Copy 2)]*	***[2]***
								[==>1213.0 Secs (Pattern 3, Copy 1)] *[==>1213.0 Secs (Pattern 3, Copy 2)]*	***[3]***
								[==>1213.0 Secs (Pattern 4, Copy 1)] *[==>1213.0 Secs (Pattern 4, Copy 2)]*	***[4]***
3		(4) HS2209+1914	WFC3/UVIS, ACCUM, UVIS1	F814W	FLASH=12; BLADE=A		Pattern 2, Exps 1-3 in HS2209 (05) (2)	13 Secs (52 Secs)	
								[==>(Pattern 1)]	***[1]***
								[==>(Pattern 2)]	***[2]***
								[==>(Pattern 3)]	***[3]***
								[==>(Pattern 4)]	***[4]***

Orbit Structure






Orbit 3
Server Version: 20160601
GS Reacq
Exp. 1, split 1
Exp. 1, split 2
Overhead
Exp. 2, copy 1
Overhead
Exp. 2, copy 2
Overhead
Exp. 3
Pointing Maneuver
Occultation
Overhead
Unused Orbital Visibility = 0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
secs.


Orbit 4
Server Version: 20160601
GS Reacq
Exp. 1, split 1
Exp. 1, split 2
Overhead
Exp. 2, copy 1
Overhead
Exp. 2, copy 2
Overhead
Exp. 3
Occultation
Overhead
Unused Orbital Visibility = 0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 14254, HS2209 - short (06), completed Wed Jan 18 02:02:34 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	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		(1-3)

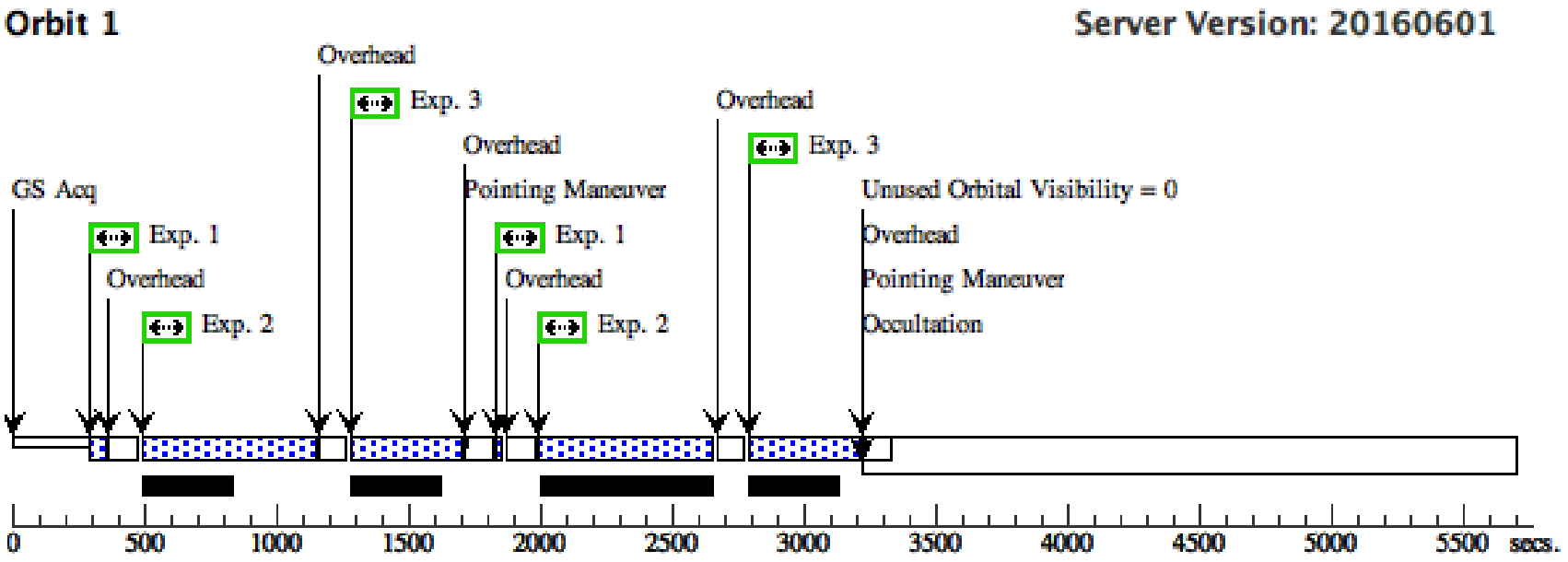
Fixed Targets

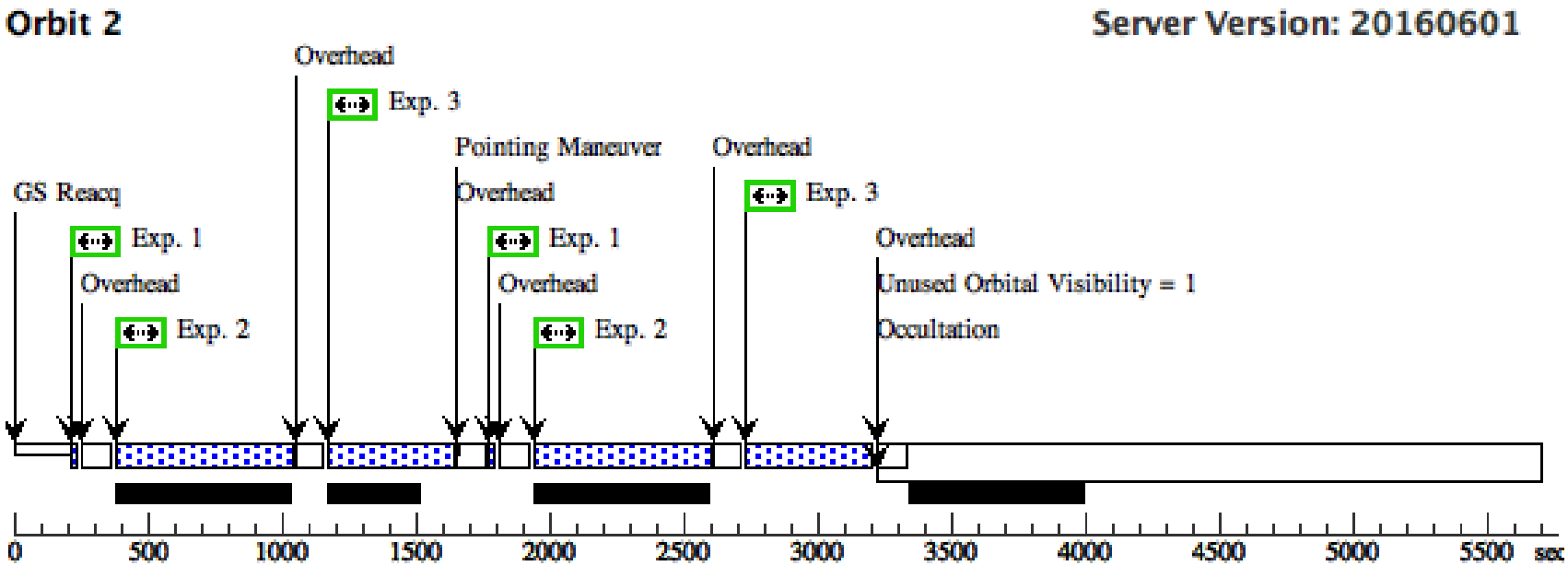
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	HS2209+1914	RA: 22 11 30.3000 (332.8762500d) Dec: +19 29 12.00 (19.48667d) Equinox: J2000		V=20	Reference Frame: SDSS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(4) HS2209+1914	WFC3/UVIS, ACCUM, UVIS1	F814W	CR-SPLIT=NO; FLASH=12		Pattern 2, Exps 1-3 in HS2209 - short (06) (2)	25 Secs (100 Secs)	
								[==>25.0 Secs (Pattern 1)] *[==>25.0 Secs (Pattern 2)]*	***[1]***
								[==>25.0 Secs (Pattern 3)] *[==>25.0 Secs (Pattern 4)]*	***[2]***
2		(4) HS2209+1914	WFC3/UVIS, ACCUM, UVIS1	F814W			Pattern 2, Exps 1-3 in HS2209 - short (06) (2)	600 Secs (2656 Secs)	
								[==>664.0 Secs (Pattern 1)] *[==>664.0 Secs (Pattern 2)]*	***[1]***
								[==>664.0 Secs (Pattern 3)] *[==>664.0 Secs (Pattern 4)]*	***[2]***
3		(4) HS2209+1914	WFC3/UVIS, ACCUM, UVIS1	F814W	FLASH=3		Pattern 2, Exps 1-3 in HS2209 - short (06) (2)	400 Secs (1786 Secs)	
								[==>419 Secs (Pattern 1)] *[==>419.0 Secs (Pattern 2)]*	***[1]***
								[==>474.0 Secs (Pattern 3)] *[==>474.0 Secs (Pattern 4)]*	***[2]***

Orbit Structure





Visit

Proposal 14254, SDSSJ0246 - 2 (53) Wed Jan 18 02:02:34 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	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		(1-3)

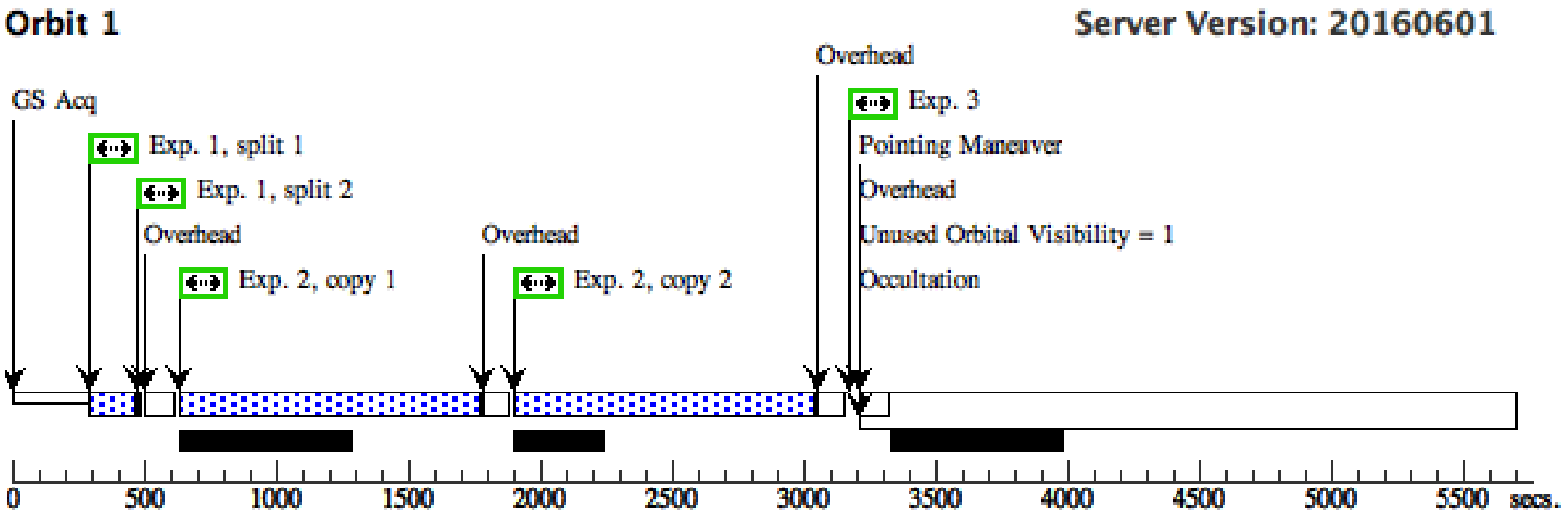
Fixed Targets

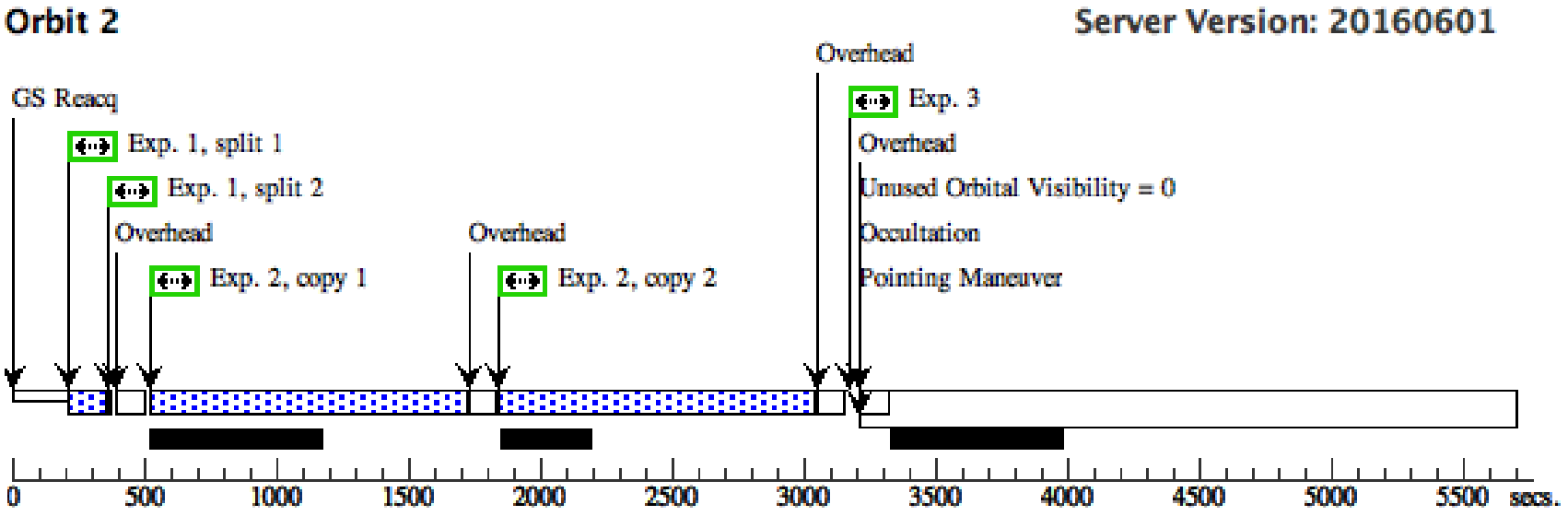
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	SDSS0246-0825	RA: 02 46 34.1100 (41.6421250d) Dec: -08 25 36.20 (-8.42672d) Equinox: J2000		V=19	Reference Frame: SDSS

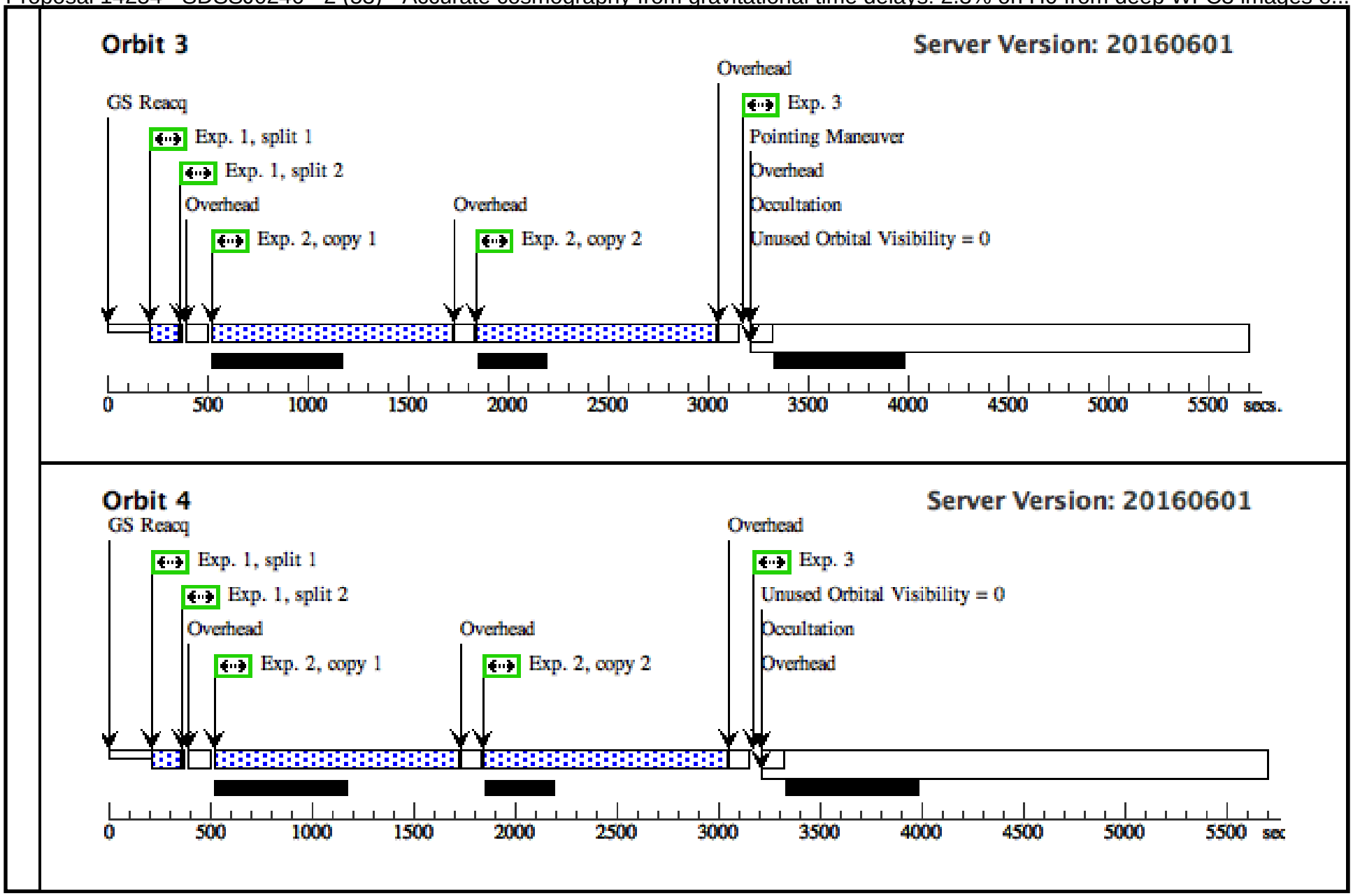
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(2) SDSS0246-0825	WFC3/UVIS, ACCUM, UVIS1	F814W	CR-SPLIT=2; FLASH=12		Pattern 2, Exps 1-3 in SDSSJ0246 - 2 (53) (2)	25 Secs (100 Secs)	
								[==>(Pattern 1, Split 1)] *[==>(Pattern 1, Split 2)]*	***[1]***
								[==>(Pattern 2, Split 1)] *[==>(Pattern 2, Split 2)]*	***[2]***
								[==>(Pattern 3, Split 1)] *[==>(Pattern 3, Split 2)]*	***[3]***
								[==>(Pattern 4, Split 1)] *[==>(Pattern 4, Split 2)]*	***[4]***
2		(2) SDSS0246-0825	WFC3/UVIS, ACCUM, UVIS1	F814W			Pattern 2, Exps 1-3 in SDSSJ0246 - 2 (53) (2)	1221 Secs X 2 (9480 Secs)	
								[==>1143.0 Secs (Pattern 1, Copy 1)] *[==>1143.0 Secs (Pattern 1, Copy 2)]*	***[1]***
								[==>1199.0 Secs (Pattern 2, Copy 1)] *[==>1199.0 Secs (Pattern 2, Copy 2)]*	***[2]***
								[==>1199.0 Secs (Pattern 3, Copy 1)] *[==>1199.0 Secs (Pattern 3, Copy 2)]*	***[3]***
								[==>1199.0 Secs (Pattern 4, Copy 1)] *[==>1199.0 Secs (Pattern 4, Copy 2)]*	***[4]***
3		(2) SDSS0246-0825	WFC3/UVIS, ACCUM, UVIS1	F814W	FLASH=12		Pattern 2, Exps 1-3 in SDSSJ0246 - 2 (53) (2)	25 Secs (100 Secs)	
								[==>(Pattern 1)]	***[1]***
								[==>(Pattern 2)]	***[2]***
								[==>(Pattern 3)]	***[3]***
								[==>(Pattern 4)]	***[4]***

Orbit Structure






Orbit 3
Server Version: 20160601
GS Reacq
Exp. 1, split 1
Exp. 1, split 2
Overhead
Exp. 2, copy 1
Overhead
Exp. 2, copy 2
Overhead
Exp. 3
Pointing Maneuver
Overhead
Occultation
Unused Orbital Visibility = 0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
secs.
Orbit 4
Server Version: 20160601
GS Reacq
Exp. 1, split 1
Exp. 1, split 2
Overhead
Exp. 2, copy 1
Overhead
Exp. 2, copy 2
Overhead
Exp. 3
Unused Orbital Visibility = 0
Occultation
Overhead
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec