



14262 - Are the fastest growing black holes at $z=2$ caused by major galaxy mergers?

Cycle: 23, 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	(1) 130913.27+381751.0	WFC3/IR	1	22-Jul-2015 22:33:22.0	yes
02	(2) 083253.96+434712.5	WFC3/IR	1	22-Jul-2015 22:33:24.0	yes
03	(3) 084632.93+272343.2	WFC3/IR	1	22-Jul-2015 22:33:25.0	yes
04	(4) 091555.62+294741.6	WFC3/IR	1	22-Jul-2015 22:33:25.0	yes
05	(5) 101415.24+404113.5	WFC3/IR	1	22-Jul-2015 22:33:26.0	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>
06	(6) 102549.18+220435.6	WFC3/IR	1	22-Jul-2015 22:33:27.0	yes
07	(7) 110621.43+104432.5	WFC3/IR	1	22-Jul-2015 22:33:28.0	yes
08	(8) 114415.49+452445.2	WFC3/IR	1	22-Jul-2015 22:33:29.0	yes
09	(9) 123623.34+281158.3	WFC3/IR	1	22-Jul-2015 22:33:30.0	yes
10	(10) 130418.72+240935.1	WFC3/IR	1	22-Jul-2015 22:33:30.0	yes
11	(11) 141449.07+421649.1	WFC3/IR	1	22-Jul-2015 22:33:31.0	yes
12	(12) 141551.86+110316.3	WFC3/IR	1	22-Jul-2015 22:33:32.0	yes
13	(13) 141811.67+271103.2	WFC3/IR	1	22-Jul-2015 22:33:33.0	yes
14	(14) 142632.62+295948.8	WFC3/IR	1	22-Jul-2015 22:33:33.0	yes
15	(15) 142723.96+533858.7	WFC3/IR	1	22-Jul-2015 22:33:34.0	yes
16	(16) 151312.67+303542.7	WFC3/IR	1	22-Jul-2015 22:33:35.0	yes
17	(17) 153014.46+070430.9	WFC3/IR	1	22-Jul-2015 22:33:36.0	yes
18	(18) 153946.63+271105.7	WFC3/IR	1	22-Jul-2015 22:33:36.0	yes
19	(19) 154632.34+223637.8	WFC3/IR	1	22-Jul-2015 22:33:37.0	yes
20	(20) 155631.49+080051.7	WFC3/IR	1	22-Jul-2015 22:33:38.0	yes
21	(21) 162411.38+220428.0	WFC3/IR	1	22-Jul-2015 22:33:39.0	yes

21 Total Orbits Used

ABSTRACT

We will test whether at $z=2$ highly accreting central supermassive black holes in galaxies are caused by major galaxy mergers. Though it has been shown in past years that mergers are not the main cause for the bulk of BHs at $z<2$, it is both possible and plausible that this can still be the case at the highest accretion rates. The targeted population ($\log(M_{\text{BH}}/M_{\text{sun}})\sim 8.5$; $L/L_{\text{Edd}}>70\%$) at $z=2$ is the most directly accessible laboratory for the earlier Universe where QSOs are known to accrete near or above the Eddington limit, yet it is the most distant one for direct diagnostics of morphological major merging signs in the pre-JWST era.

We propose to observe 21 highly accreting QSOs at $z\sim 2$ with $L/L_{\text{Edd}}>70\%$ and analyse their host galaxy morphologies w.r.t. the incidence of

strong distortions as proxy for recent or ongoing major galaxy merging. We will compare this with the strong distortion rate of >300 inactive galaxies at same z and M^* from the publicly available CANDELS+ERS dataset. For this purpose we will remove the bright nucleus in the QSOs and mock up characteristic point source residuals in the centers of all inactive galaxies. A "blind" ranking of the distortion state of the combined two (host) galaxy samples based on a visual classification by at least 10 galaxy experts will allow to generate a bias-free statistic of merger fraction in both samples. Assuming a merger fraction of 20% for the inactive galaxies we will be able to detect an enhancement to at least 50% for QSOs at >99.7% significance. If found, this would immediately imply that major merging is a significant or even dominating mechanism to fuel the highest accretion rate QSOs in the early Universe.

OBSERVING DESCRIPTION

All the quasars in this program have magnitudes in the range $H=16-17$ mag (Vega). ETC run:

<http://etc.stsci.edu/etc/results/WFC3IR.im.731999/>

For each target, we take 4 exposures of 600 seconds each, using the STEP100 readout sequence. This allows ~6 reads before saturation of the PSF core, which occurs at ~90 seconds, and a total of 12 reads for non-saturated pixels tracing fainter host galaxy structures at 0.5-1.0 arcsec separations.

The four exposures are dithered using a box pattern that:

- 1) uses half-pixel steps, to allow accurate reconstruction of the diffraction-limited image
- 2) has a larger than standard spacing (~4x4 arcsec) so that persistence from the saturated PSF core will not contaminate the object flux during further exposures in the sequence.

We have ensured (with bright object tool and SDSS imaging) that persistence from other nearby objects will not contaminate the quasar flux, including due to the larger-than-standard dithering (ie we rejected a few targets that were too close to bright Galactic stars).

Proposal 14262 - Visit 01 - Are the fastest growing black holes at z=2 caused by major galaxy mergers?

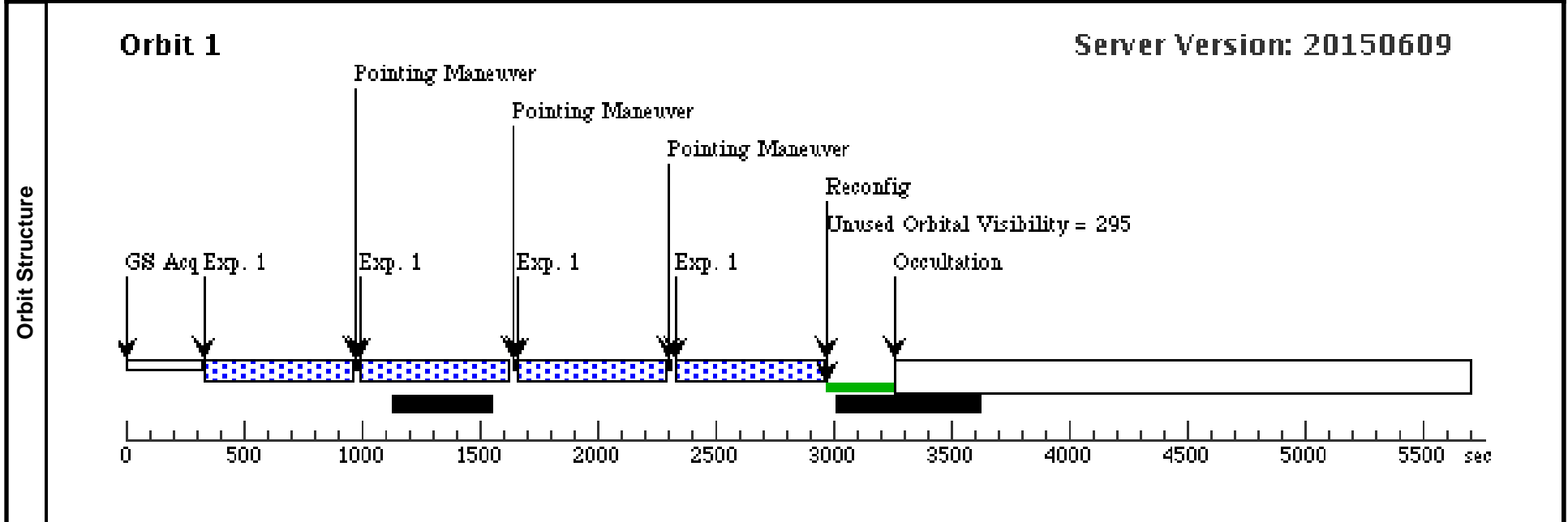
Thu Jul 23 02:33:40 GMT 2015

Visit	Proposal 14262, Visit 01		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: WFC3/IR		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	130913.27+381751.0	RA: 13 09 13.2700 (197.3052917d) Dec: +38 17 51.00 (38.29750d) Equinox: J2000		V=(?) H=16 mag (Vega)	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(1) 130913.27+381751.0	130913.27+381751.0	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=12; SAMP-SEQ=STEP100		Pattern 1, Exps 1-1 in Visit 01 (1)	599.232292 Secs (2396.929 Secs)



Proposal 14262 - Visit 02 - Are the fastest growing black holes at z=2 caused by major galaxy mergers?

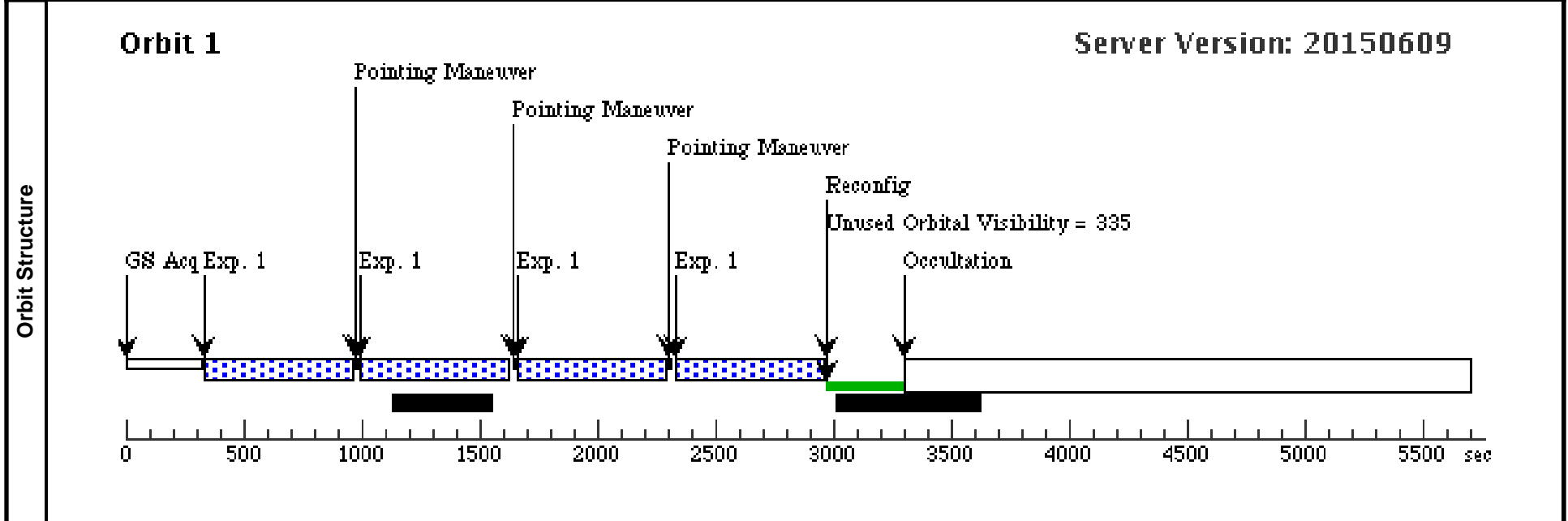
Thu Jul 23 02:33:40 GMT 2015

Visit	Proposal 14262, Visit 02 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: (none)		
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Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false	(1)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(2)	083253.96+434712.5	RA: 08 32 53.9600 (128.2248333d) Dec: +43 47 12.50 (43.78681d) Equinox: J2000		V=(?) H=16 mag (Vega)	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(2) 083253.96+434712.5	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=12; SAMP-SEQ=STEP100		Pattern 1, Exps 1-1 in Visit 02 (1)	599.232292 Secs (2396.929 Secs)	[1]



Proposal 14262 - Visit 03 - Are the fastest growing black holes at z=2 caused by major galaxy mergers?

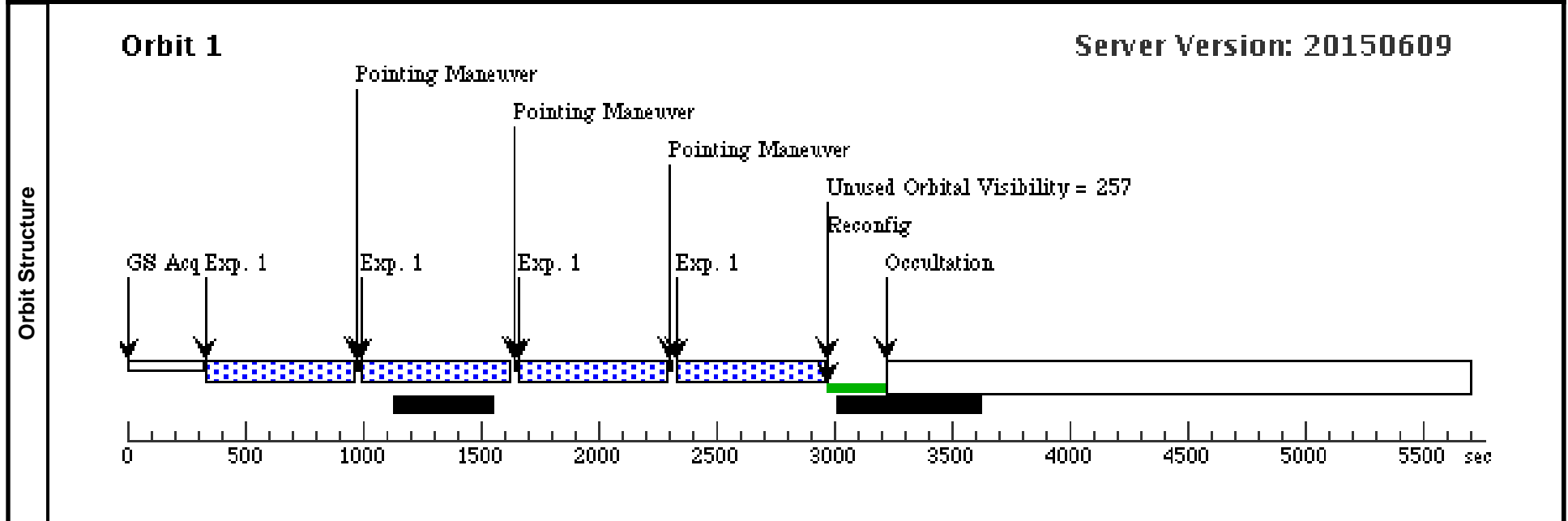
Thu Jul 23 02:33:40 GMT 2015

Visit	Proposal 14262, Visit 03 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: (none)		
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Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false	(1)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(3)	084632.93+272343.2	RA: 08 46 32.9400 (131.6372500d) Dec: +27 23 43.20 (27.39533d) Equinox: J2000		V=(?) H=16 mag (Vega)	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(3) 084632.93+272343.2	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=12; SAMP-SEQ=STEP100		Pattern 1, Exps 1-1 in Visit 03 (1)	599.232292 Secs (2396.929 Secs)	[1]



Proposal 14262 - Visit 04 - Are the fastest growing black holes at z=2 caused by major galaxy mergers?

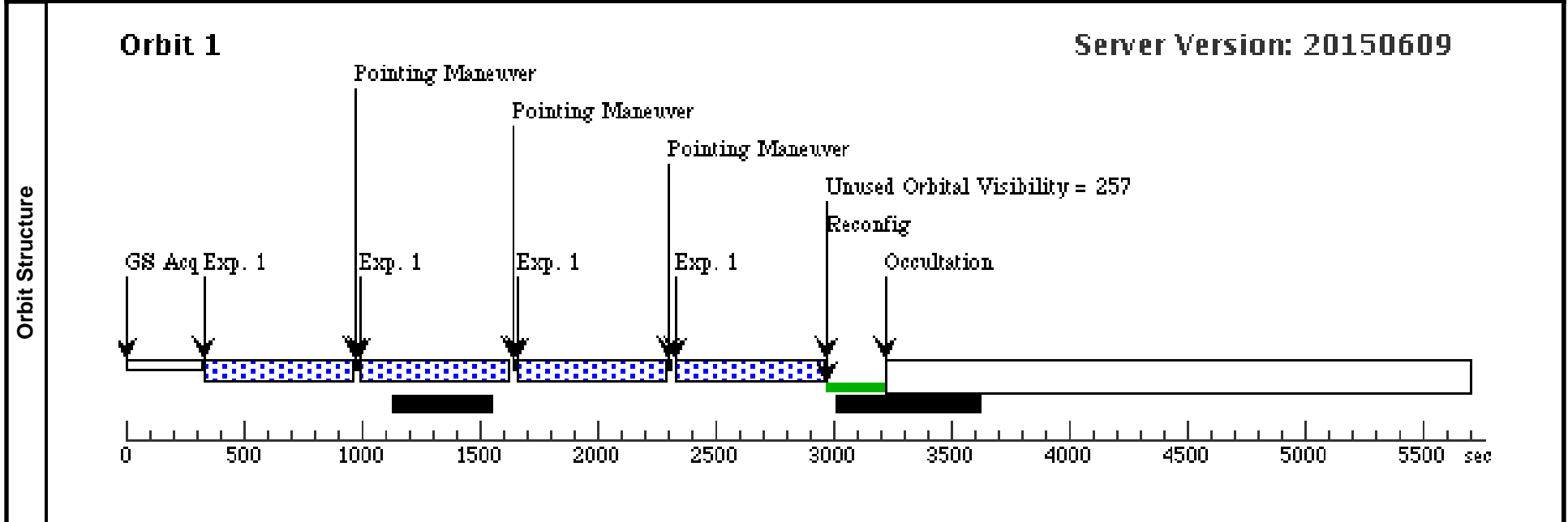
Thu Jul 23 02:33:40 GMT 2015

Visit	Proposal 14262, Visit 04 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: (none)		
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Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false	(1)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(4)	091555.62+294741.6	RA: 09 15 55.6200 (138.9817500d) Dec: +29 47 41.60 (29.79489d) Equinox: J2000		V=(?) H=16 mag (Vega)	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(4) 091555.62+294741.6	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=12; SAMP-SEQ=STEP100		Pattern 1, Exps 1-1 in Visit 04 (1)	599.232292 Secs (2396.929 Secs)	[1]



Proposal 14262 - Visit 05 - Are the fastest growing black holes at z=2 caused by major galaxy mergers?

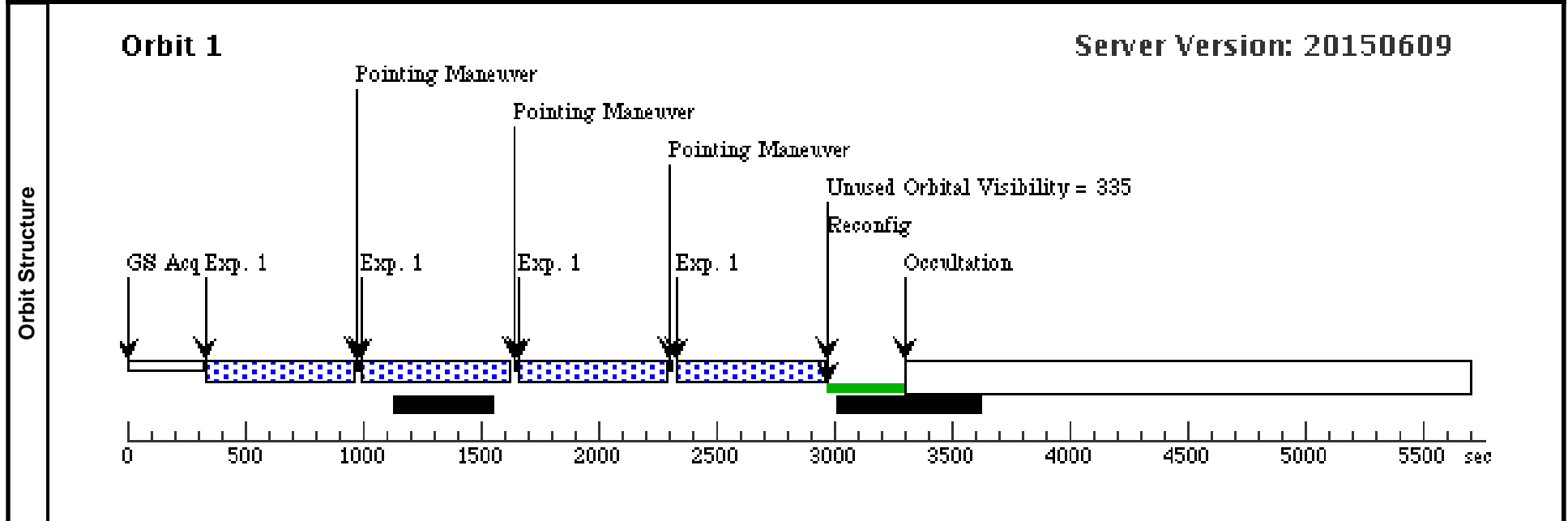
Thu Jul 23 02:33:41 GMT 2015

Visit	Proposal 14262, Visit 05 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: (none)		
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Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false	(1)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(5)	101415.24+404113.5	RA: 10 14 15.2400 (153.5635000d) Dec: +40 41 13.50 (40.68708d) Equinox: J2000		V=(?) H=16 mag (Vega)	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(5) 101415.24+404113.5	101415.24+404113.5	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=12; SAMP-SEQ=STEP100		Pattern 1, Exps 1-1 in Visit 05 (1)	599.232292 Secs (2396.929 Secs)	[1]



Proposal 14262 - Visit 06 - Are the fastest growing black holes at z=2 caused by major galaxy mergers?

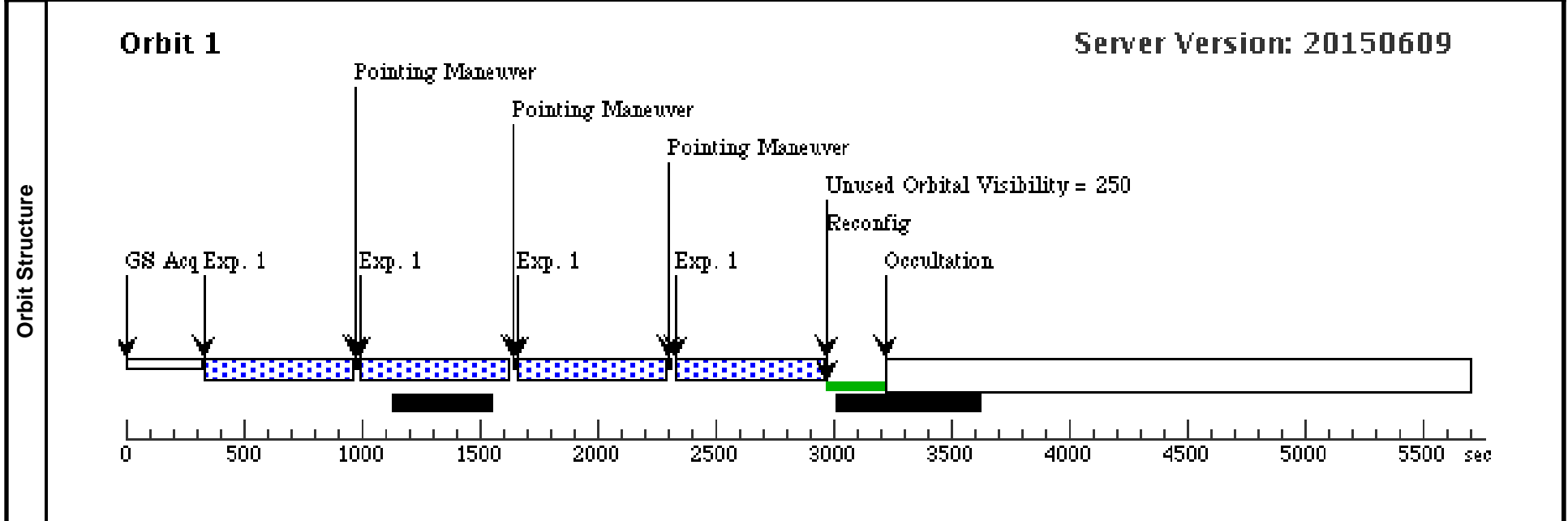
Thu Jul 23 02:33:41 GMT 2015

Visit	Proposal 14262, Visit 06		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: WFC3/IR		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(6)	102549.18+220435.6	RA: 10 25 49.1800 (156.4549167d) Dec: +22 04 35.60 (22.07656d) Equinox: J2000			V=(?) H=16 mag (Vega)

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(6) 102549.18+220435.6	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=12; SAMP-SEQ=STEP100			Pattern 1, Exps 1-1 in Visit 06 (1)	599.232292 Secs (2396.929 Secs)



Proposal 14262 - Visit 07 - Are the fastest growing black holes at z=2 caused by major galaxy mergers?

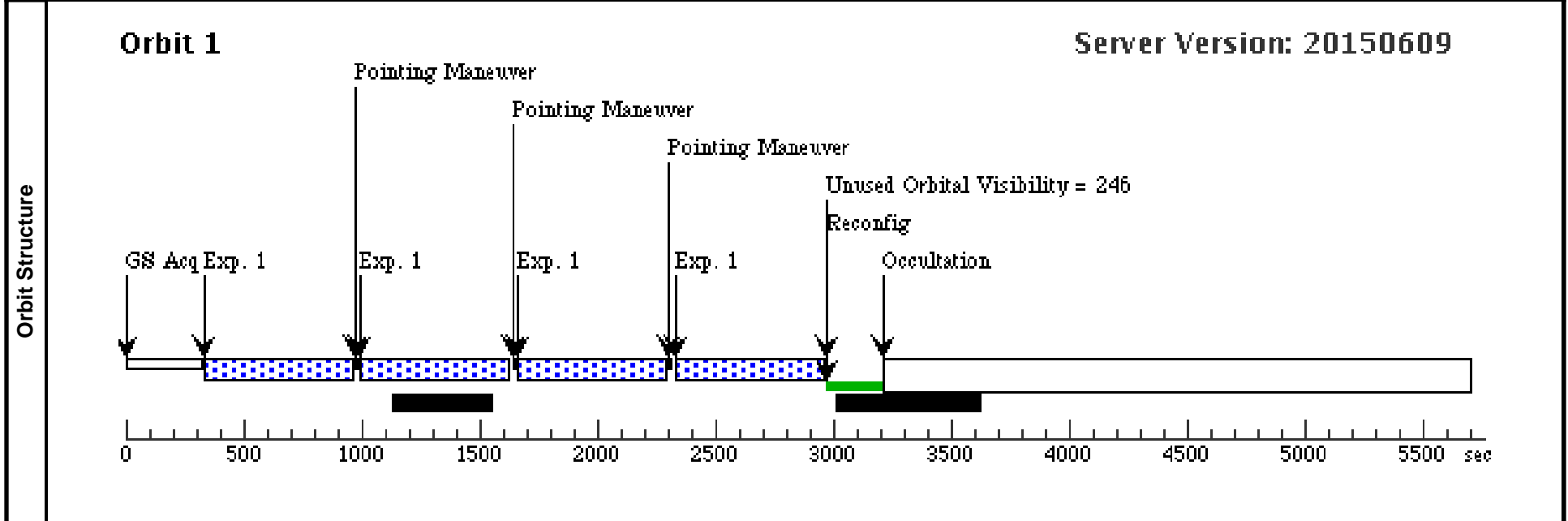
Thu Jul 23 02:33:41 GMT 2015

Visit	Proposal 14262, Visit 07 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: (none)		
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Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false	(1)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(7)	110621.43+104432.5	RA: 11 06 21.4300 (166.5892917d) Dec: +10 44 32.50 (10.74236d) Equinox: J2000		V=(?) H=16 mag (Vega)	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(7) 110621.43+104432.5	110621.43+104432.5	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=12; SAMP-SEQ=STEP100		Pattern 1, Exps 1-1 in Visit 07 (1)	599.232292 Secs (2396.929 Secs)	[1]



Proposal 14262 - Visit 08 - Are the fastest growing black holes at z=2 caused by major galaxy mergers?

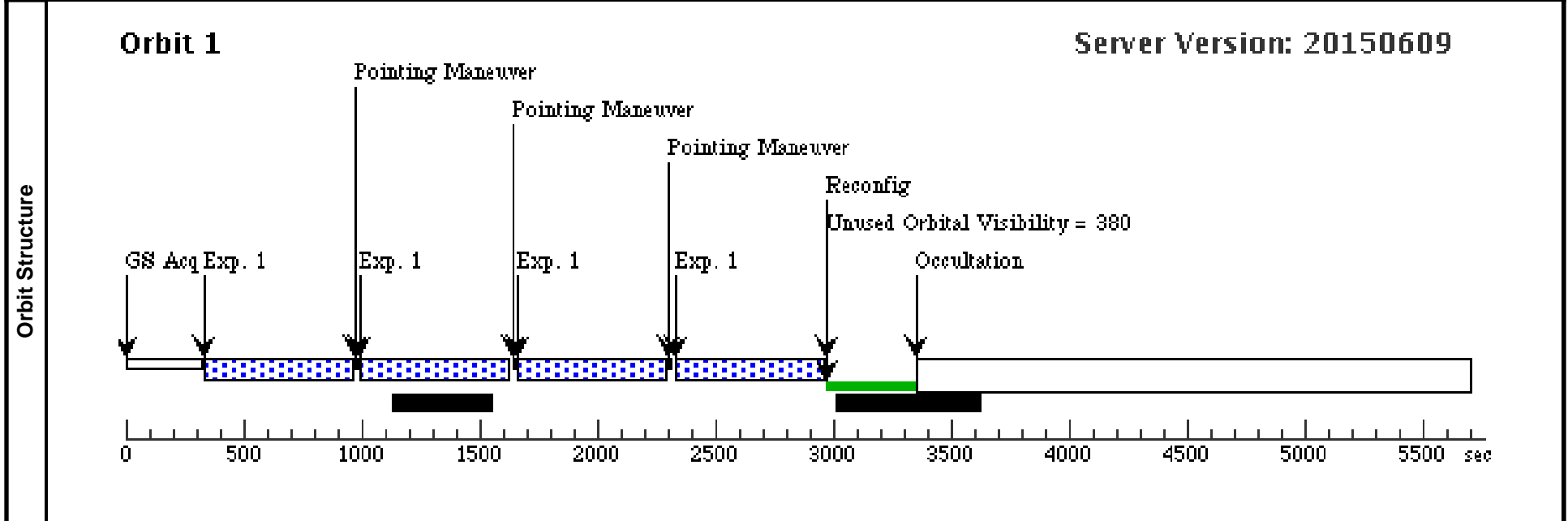
Thu Jul 23 02:33:41 GMT 2015

Visit	Proposal 14262, Visit 08 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: (none)		
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Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false	(1)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(8)	114415.49+452445.2	RA: 11 44 15.4900 (176.0645417d) Dec: +45 24 45.20 (45.41256d) Equinox: J2000		V=(?) H=16 mag (Vega)	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(8) 114415.49+452445.2	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=12; SAMP-SEQ=STEP100		Pattern 1, Exps 1-1 in Visit 08 (1)	599.232292 Secs (2396.929 Secs)	[1]



Proposal 14262 - Visit 09 - Are the fastest growing black holes at z=2 caused by major galaxy mergers?

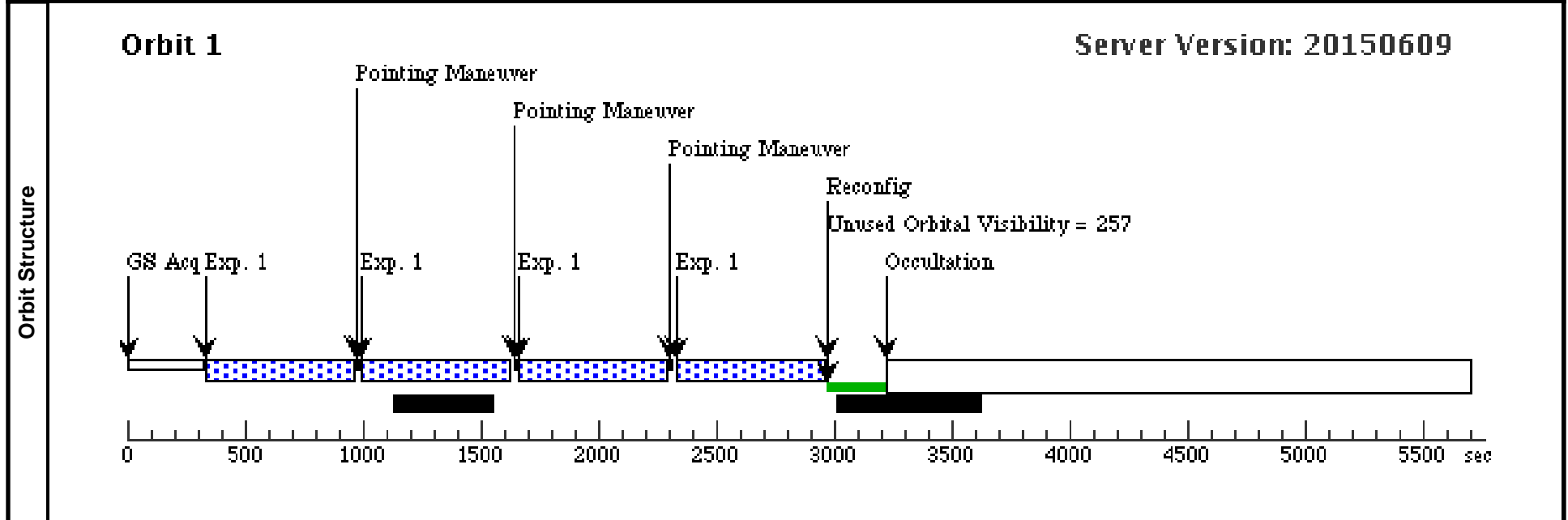
Thu Jul 23 02:33:41 GMT 2015

Visit	Proposal 14262, Visit 09		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: WFC3/IR		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(9)	123623.34+281158.3	RA: 12 36 23.3400 (189.0972500d) Dec: +28 11 58.30 (28.19953d) Equinox: J2000			V=(?) H=16 mag (Vega)

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(9) 123623.34+281158.3	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=12; SAMP-SEQ=STEP100			Pattern 1, Exps 1-1 in Visit 09 (1)	599.232292 Secs (2396.929 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]



Proposal 14262 - Visit 10 - Are the fastest growing black holes at z=2 caused by major galaxy mergers?

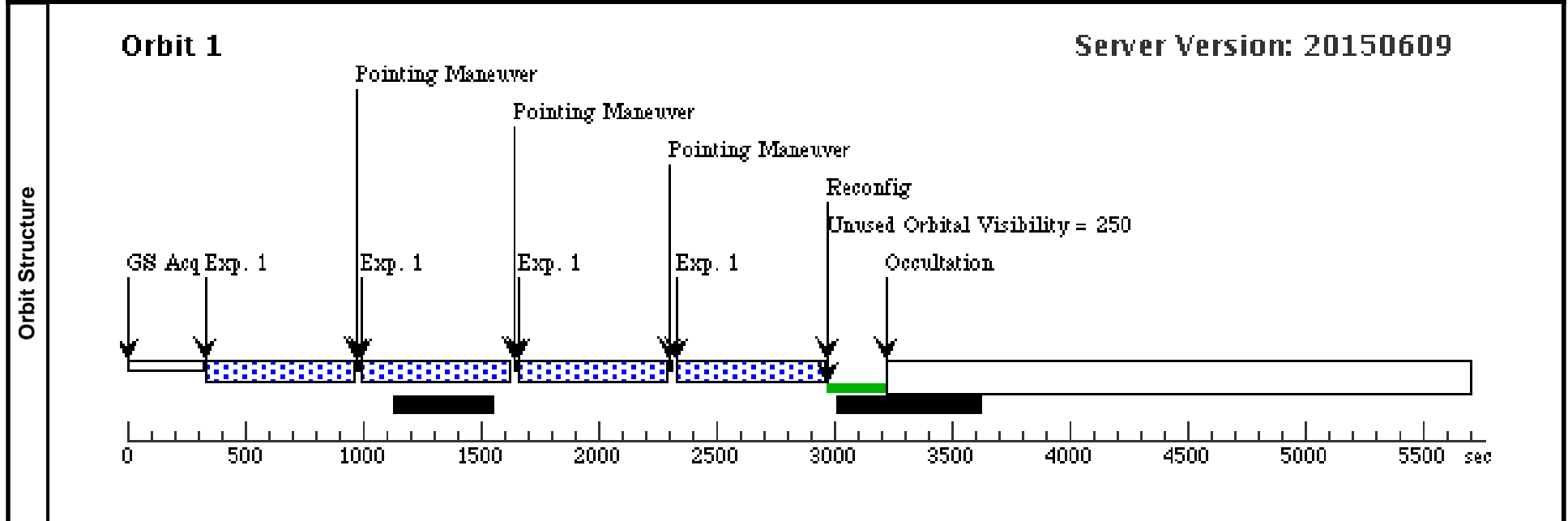
Thu Jul 23 02:33:41 GMT 2015

Visit	Proposal 14262, Visit 10		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: WFC3/IR		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(10)	130418.72+240935.1	RA: 13 04 18.7200 (196.0780000d) Dec: +24 09 35.10 (24.15975d) Equinox: J2000			V=(?) H=16 mag (Vega)

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(10) 130418.72+240935.1	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=12; SAMP-SEQ=STEP100			Pattern 1, Exps 1-1 in Visit 10 (1)	599.232292 Secs (2396.929 Secs)



Proposal 14262 - Visit 11 - Are the fastest growing black holes at z=2 caused by major galaxy mergers?

Thu Jul 23 02:33:41 GMT 2015

Visit	Proposal 14262, Visit 11 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: (none)									
Patterns	#	Primary Pattern	Secondary Pattern		Exposures					
	(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(11)	141449.07+421649.1	RA: 14 14 49.0700 (213.7044583d) Dec: +42 16 49.10 (42.28031d) Equinox: J2000		V=(?) H=16 mag (Vega)	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(11) 141449.07+421649.1	141449.07+421649.1	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=12; SAMP-SEQ=STEP100		Pattern 1, Exps 1-1 in Visit 11 (1)	599.232292 Secs (2396.929 Secs)	[1]
Orbit Structure	<p>Orbit 1 Server Version: 20150609</p> <p>The diagram shows a timeline from 0 to 5500 seconds. Key events include: GS Acq (0-50s), Exp. 1 (50-100s), Pointing Maneuver (100-150s), Exp. 1 (150-200s), Pointing Maneuver (200-250s), Exp. 1 (250-300s), Pointing Maneuver (300-350s), Reconfig (350-400s), Exp. 1 (400-450s), and Occultation (450-550s). A green bar highlights the Reconfig and Occultation periods. A note indicates 'Unused Orbital Visibility = 335'.</p>									

Proposal 14262 - Visit 12 - Are the fastest growing black holes at z=2 caused by major galaxy mergers?

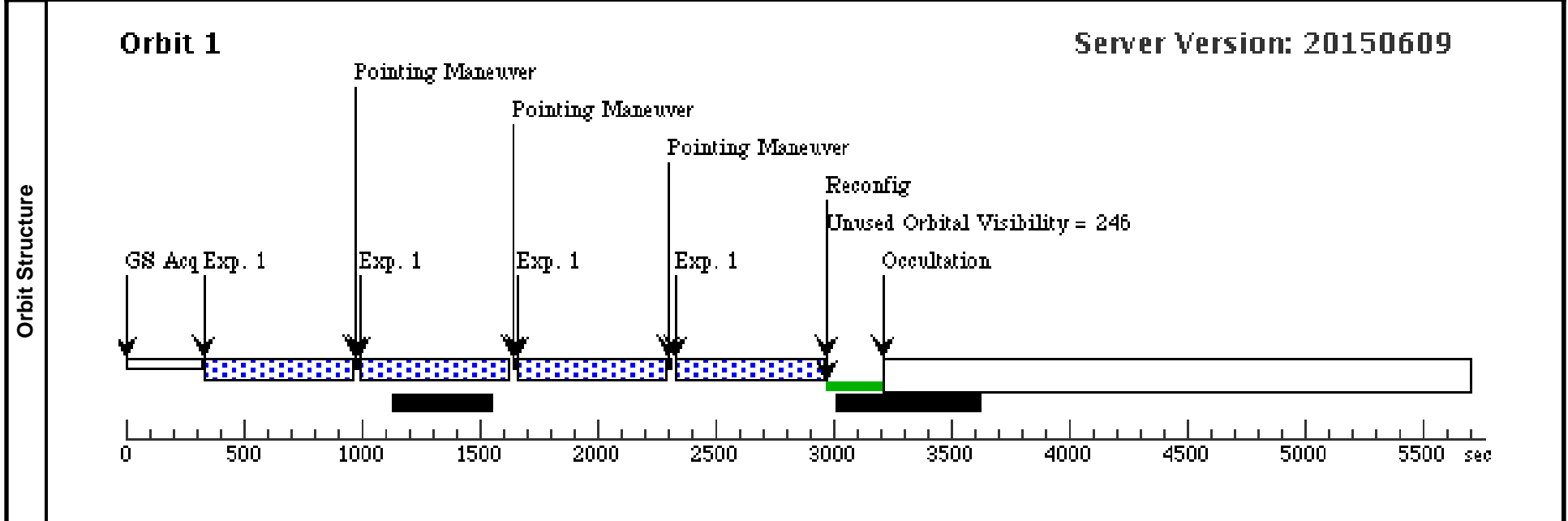
Thu Jul 23 02:33:41 GMT 2015

Visit	Proposal 14262, Visit 12 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: (none)		
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Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false	(1)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(12)	141551.86+110316.3	RA: 14 15 51.8600 (213.9660833d) Dec: +11 03 16.30 (11.05453d) Equinox: J2000		V=(?) H=16 mag (Vega)	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(12) 141551.86+110316.3	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=12; SAMP-SEQ=STEP100		Pattern 1, Exps 1-1 in Visit 12 (1)	599.232292 Secs (2396.929 Secs)	[1]



Proposal 14262 - Visit 13 - Are the fastest growing black holes at z=2 caused by major galaxy mergers?

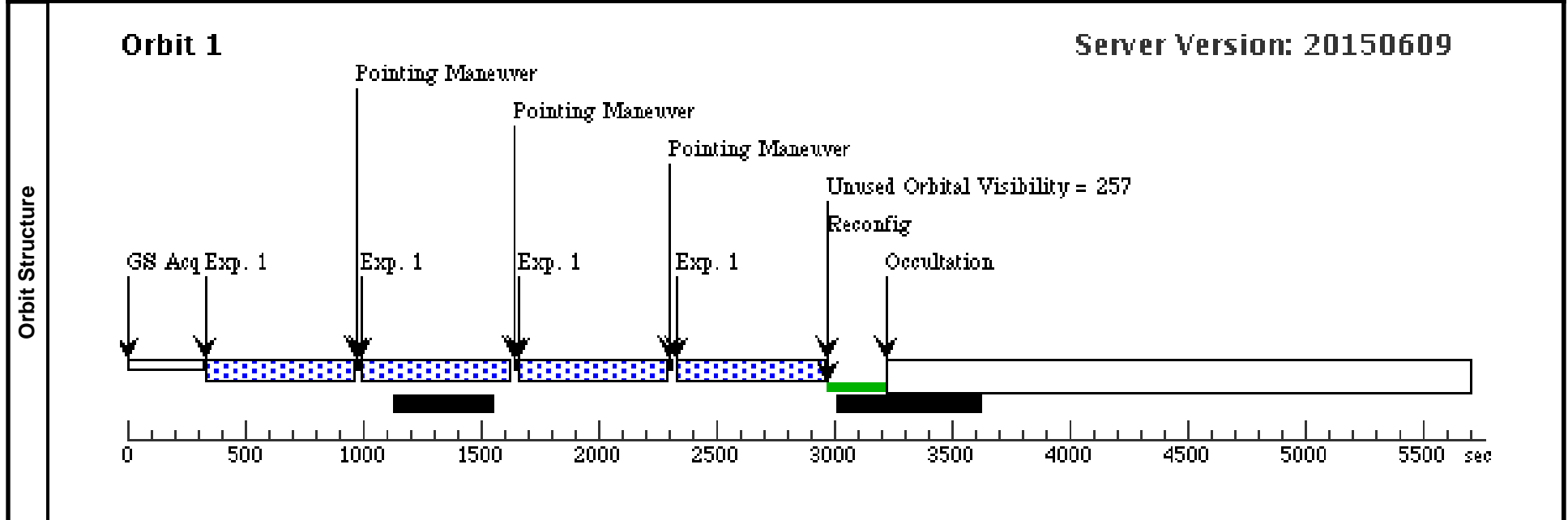
Thu Jul 23 02:33:41 GMT 2015

Visit	Proposal 14262, Visit 13 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: (none)		
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Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false	(1)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(13)	141811.67+271103.2	RA: 14 18 11.6700 (214.5486250d) Dec: +27 11 3.20 (27.18422d) Equinox: J2000		V=(?) H=16 mag (Vega)	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(13) 141811.67+271103.2	141811.67+271103.2	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=12; SAMP-SEQ=STEP100		Pattern 1, Exps 1-1 in Visit 13 (1)	599.232292 Secs (2396.929 Secs)	[1]



Proposal 14262 - Visit 14 - Are the fastest growing black holes at z=2 caused by major galaxy mergers?

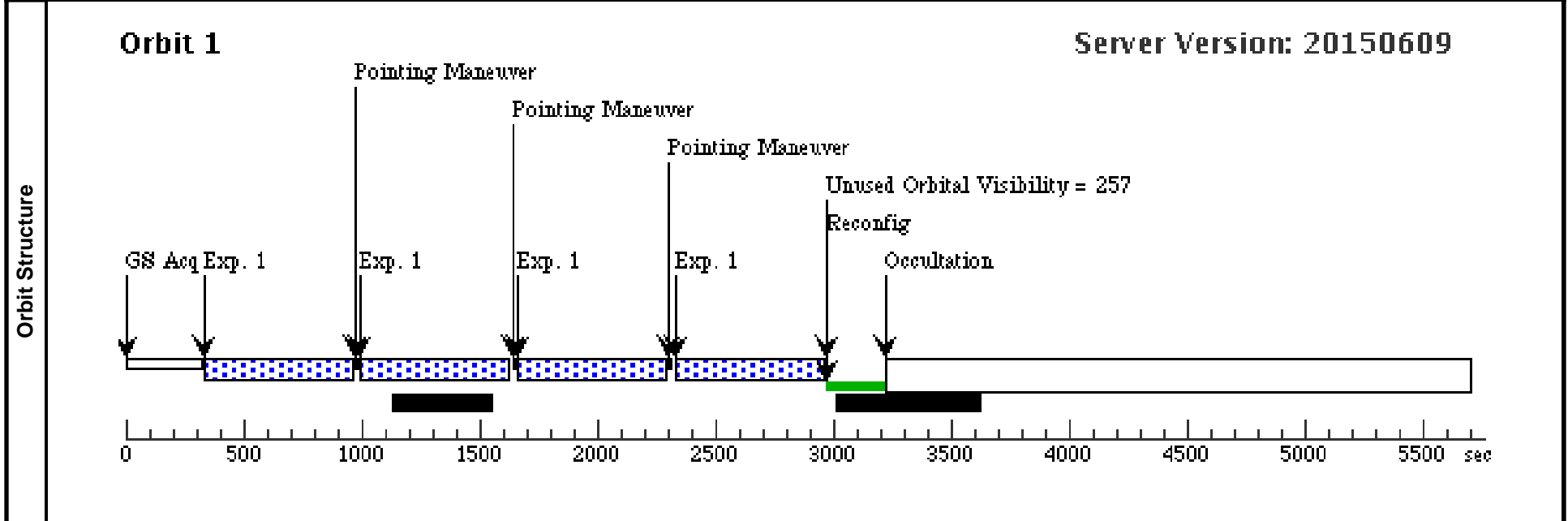
Thu Jul 23 02:33:41 GMT 2015

Visit	Proposal 14262, Visit 14		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: WFC3/IR		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(14)	142632.62+295948.8	RA: 14 26 32.6200 (216.6359167d) Dec: +29 59 48.80 (29.99689d) Equinox: J2000			V=(?) H=16 mag (Vega)

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(14) 142632.62+295948.8	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=12; SAMP-SEQ=STEP100			Pattern 1, Exps 1-1 in Visit 14 (1)	599.232292 Secs (2396.929 Secs)



Proposal 14262 - Visit 15 - Are the fastest growing black holes at z=2 caused by major galaxy mergers?

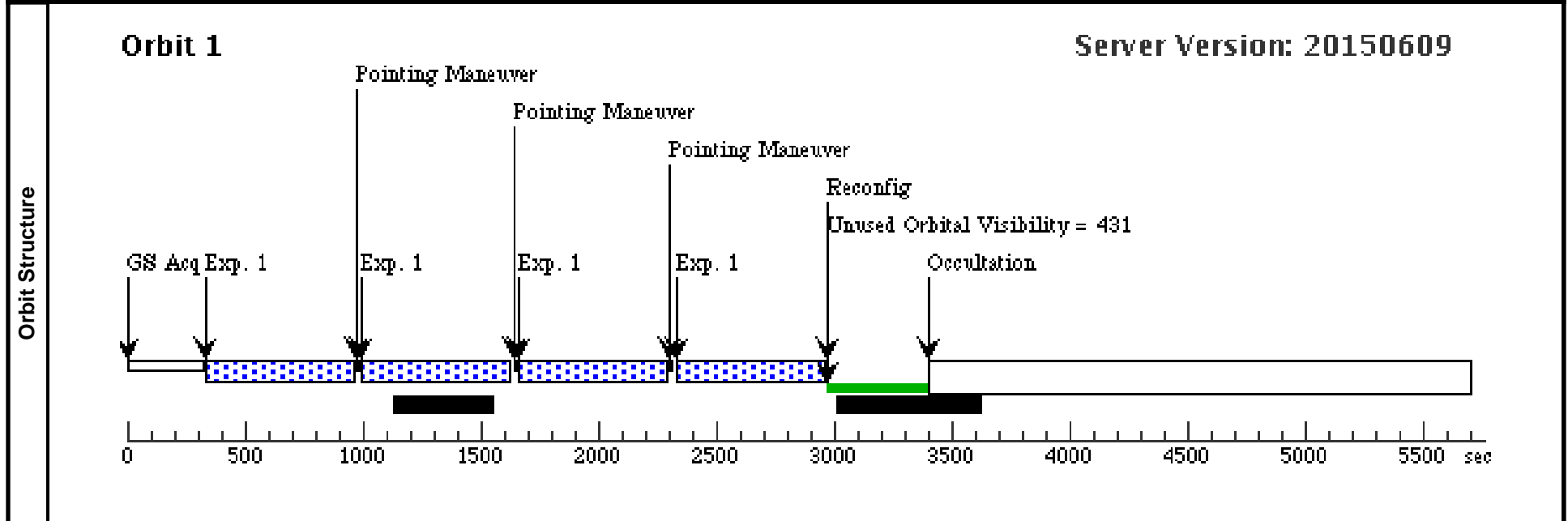
Thu Jul 23 02:33:41 GMT 2015

Visit	Proposal 14262, Visit 15		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: WFC3/IR		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(15)	142723.96+533858.7	RA: 14 27 23.9600 (216.8498333d) Dec: +53 38 58.70 (53.64964d) Equinox: J2000		V=(?) H=16 mag (Vega)	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(15) 142723.96+533858.7	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=12; SAMP-SEQ=STEP100			Pattern 1, Exps 1-1 in Visit 15 (1)	599.232292 Secs (2396.929 Secs)



Proposal 14262 - Visit 16 - Are the fastest growing black holes at z=2 caused by major galaxy mergers?

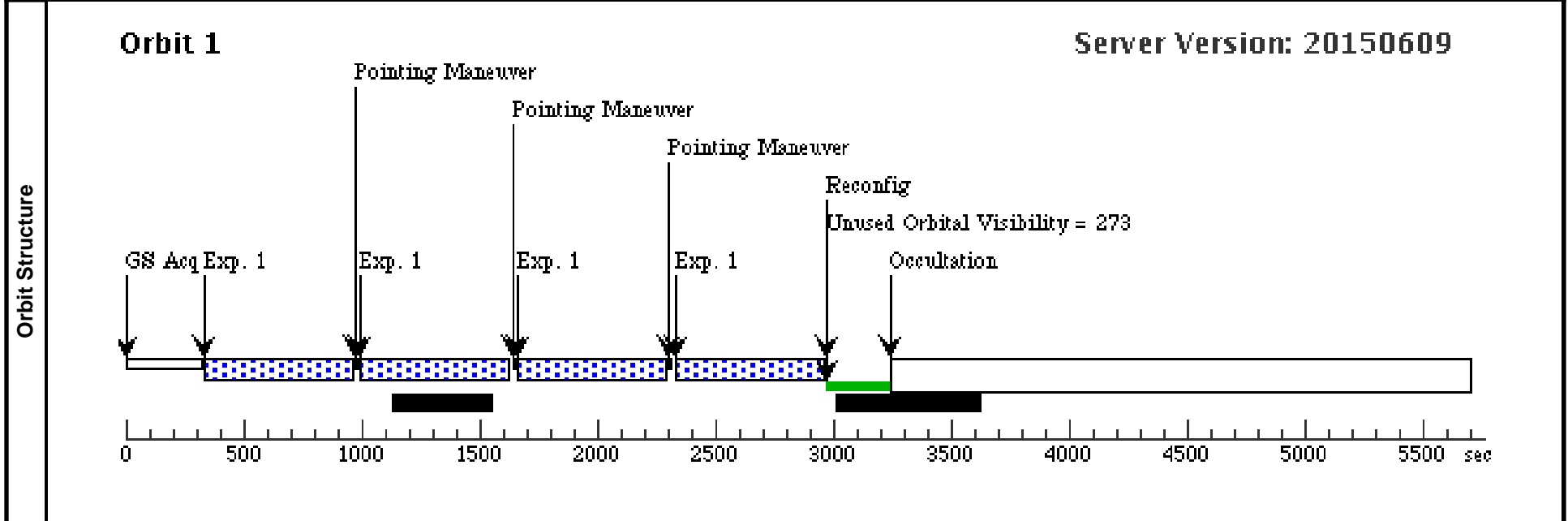
Thu Jul 23 02:33:42 GMT 2015

Visit	Proposal 14262, Visit 16 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: (none)		
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Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false	(1)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(16)	151312.67+303542.7	RA: 15 13 12.6700 (228.3027917d) Dec: +30 35 42.70 (30.59519d) Equinox: J2000		V=(?) H=16 mag (Vega)	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(16) 151312.67+303542.7	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=12; SAMP-SEQ=STEP100		Pattern 1, Exps 1-1 in Visit 16 (1)	599.232292 Secs (2396.929 Secs)	[1]



Proposal 14262 - Visit 17 - Are the fastest growing black holes at z=2 caused by major galaxy mergers?

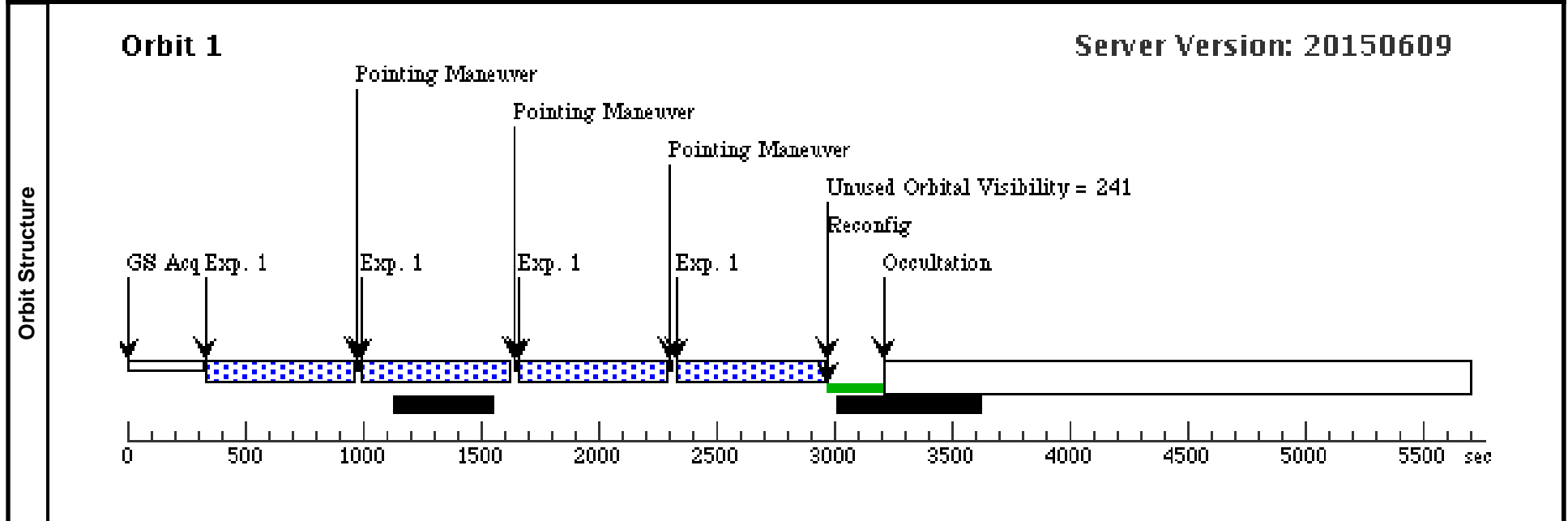
Thu Jul 23 02:33:42 GMT 2015

Visit	Proposal 14262, Visit 17		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: WFC3/IR		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(17)	153014.46+070430.9	RA: 15 30 14.4600 (232.5602500d) Dec: +07 04 30.90 (7.07525d) Equinox: J2000		V=(?) H=16 mag (Vega)	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(17) 153014.46+070430.9	153014.46+070430.9	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=12; SAMP-SEQ=STEP100		Pattern 1, Exps 1-1 in Visit 17 (1)	599.232292 Secs (2396.929 Secs)



Proposal 14262 - Visit 18 - Are the fastest growing black holes at z=2 caused by major galaxy mergers?

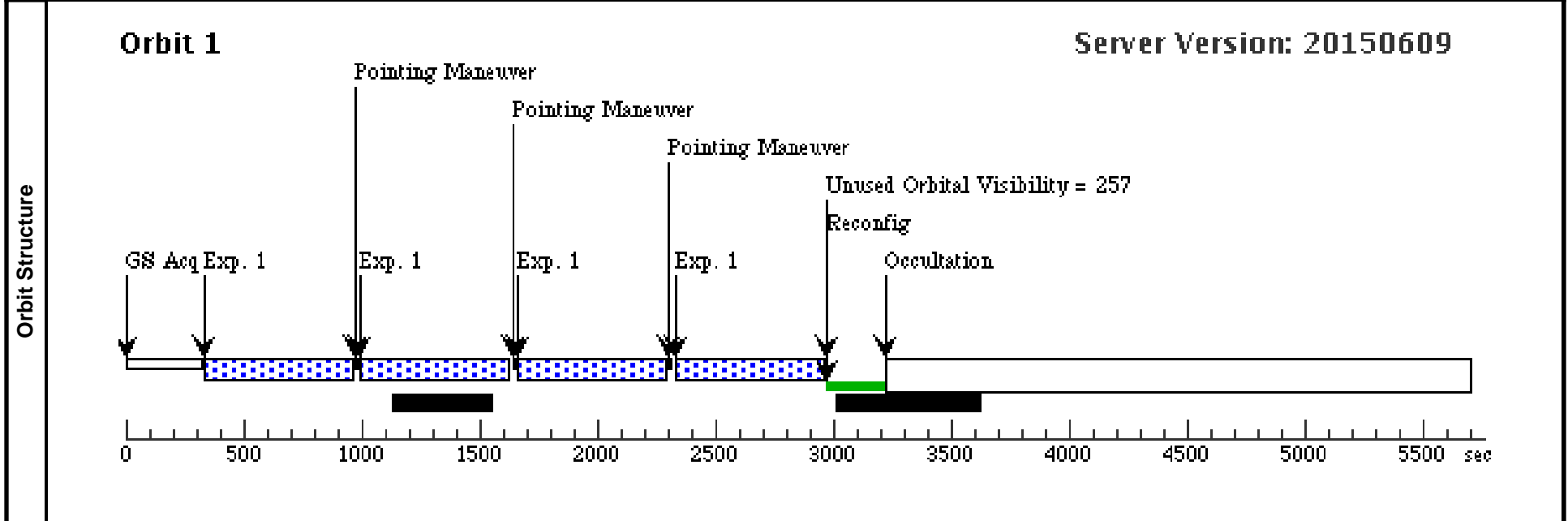
Thu Jul 23 02:33:42 GMT 2015

Visit	Proposal 14262, Visit 18 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: (none)		
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Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false	(1)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(18)	153946.63+271105.7	RA: 15 39 46.6300 (234.9442917d) Dec: +27 11 5.70 (27.18492d) Equinox: J2000		V=(?) H=16 mag (Vega)	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(18) 153946.63+271105.7	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=12; SAMP-SEQ=STEP100		Pattern 1, Exps 1-1 in Visit 18 (1)	599.232292 Secs (2396.929 Secs)	[1]



Proposal 14262 - Visit 19 - Are the fastest growing black holes at z=2 caused by major galaxy mergers?

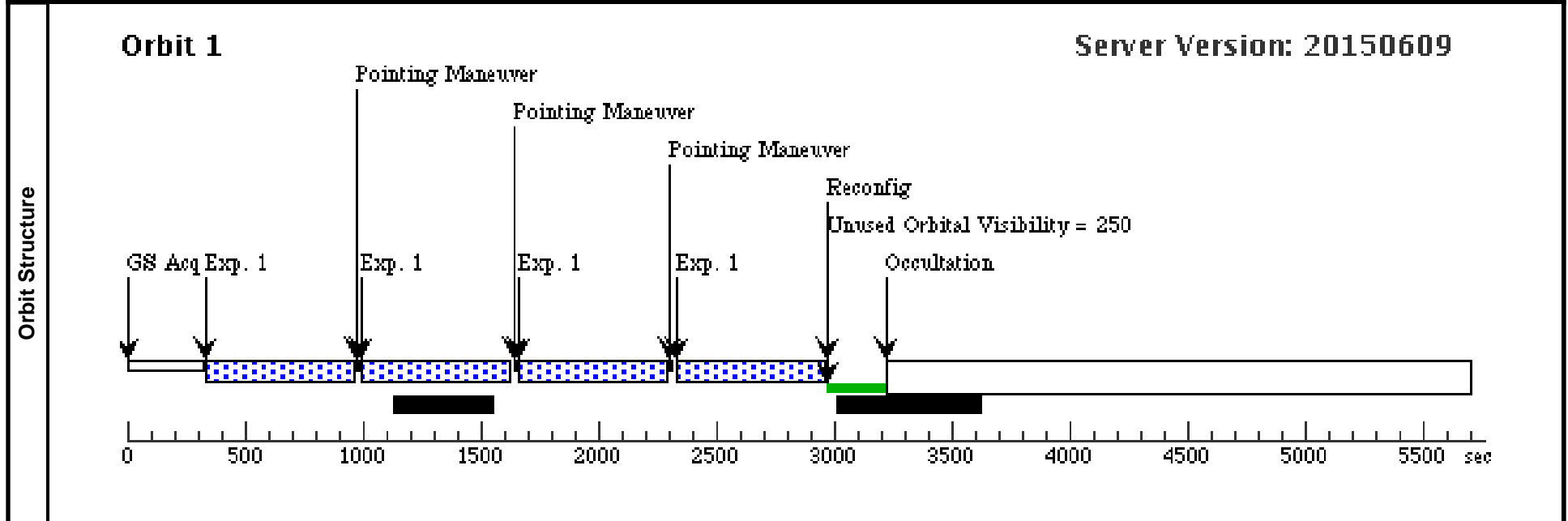
Thu Jul 23 02:33:42 GMT 2015

Visit	Proposal 14262, Visit 19		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: WFC3/IR		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false	(1)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(19)	154632.34+223637.8	RA: 15 46 32.3400 (236.6347500d) Dec: +22 36 37.80 (22.61050d) Equinox: J2000		V=(?) H=16 mag (Vega)	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(19) 154632.34+223637.8	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=12; SAMP-SEQ=STEP100		Pattern 1, Exps 1-1 in Visit 19 (1)	599.232292 Secs (2396.929 Secs)	[1]
									[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]	



Proposal 14262 - Visit 20 - Are the fastest growing black holes at z=2 caused by major galaxy mergers?

Thu Jul 23 02:33:42 GMT 2015

Visit	Proposal 14262, Visit 20 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: (none)									
	Patterns	# (1)	Primary Pattern Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Secondary Pattern Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false	Exposures (1)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(20)	155631.49+080051.7	RA: 15 56 31.4900 (239.1312083d) Dec: +08 00 51.70 (8.01436d) Equinox: J2000		V=(?) H=16 mag (Vega)	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(20) 155631.49+08051.7	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=12; SAMP-SEQ=STEP100		Pattern 1, Exps 1-1 in Visit 20 (1)	599.232292 Secs (2396.929 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]	[1]
Orbit Structure	<div style="display: flex; justify-content: space-between;"> Orbit 1 Server Version: 20150609 </div> <p>The diagram shows a timeline from 0 to 5500 seconds. Key events include: GS Acq Exp. 1 (0-50s), Exp. 1 (100-120s), Pointing Maneuver (120-150s), Exp. 1 (160-180s), Pointing Maneuver (180-210s), Exp. 1 (230-250s), Pointing Maneuver (250-280s), Exp. 1 (280-300s), Reconfig (300-310s), Unused Orbital Visibility = 241 (310-320s), Occultation (320-330s), and another Occultation (330-340s). A blue checkered bar highlights the exposure periods, and a green bar highlights the reconfig period. Black bars below the axis indicate occultation periods.</p>									

Proposal 14262 - Visit 21 - Are the fastest growing black holes at z=2 caused by major galaxy mergers?

Thu Jul 23 02:33:42 GMT 2015

Visit	Proposal 14262, Visit 21		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: WFC3/IR		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(21)	162411.38+220428.0	RA: 16 24 11.3800 (246.0474167d) Dec: +22 04 28.00 (22.07444d) Equinox: J2000			V=(?) H=16 mag (Vega)

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(21) 162411.38+220428.0	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=12; SAMP-SEQ=STEP100			Pattern 1, Exps 1-1 in Visit 21 (1)	599.232292 Secs (2396.929 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]

