



13676 - Solving the X-ray Origin Problem in Kiloparsec-Scale Relativistic Jets: Hubble Provides the Missing Key

Cycle: 22, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

<i>Name</i>	<i>Institution</i>	<i>E-Mail</i>
Dr. Eileen T Meyer (PI) (Contact)	Space Telescope Science Institute	meyer@stsci.edu
Dr. William B. Sparks (CoI)	Space Telescope Science Institute	sparks@stsci.edu
Dr. Markos Georganopoulos (CoI)	University of Maryland Baltimore County	georgano@umbc.edu
Prof. Eric S. Perlman (CoI)	Florida Institute of Technology	eperlman@fit.edu

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) 4C62.29	ACS/WFC	4	11-Aug-2014 21:04:40.0	yes
02	(2) 4C08.64	ACS/WFC	2	11-Aug-2014 21:04:43.0	yes
03	(3) 4C65.15	ACS/WFC	2	11-Aug-2014 21:04:46.0	yes
04	(4) 4C00.58	ACS/WFC	2	11-Aug-2014 21:04:48.0	yes
05	(1) 4C62.29	WFC3/IR	1	11-Aug-2014 21:04:50.0	yes
06	(2) 4C08.64	WFC3/IR	1	11-Aug-2014 21:04:52.0	yes
07	(3) 4C65.15	WFC3/IR	1	11-Aug-2014 21:04:54.0	yes
08	(4) 4C00.58	WFC3/IR	1	11-Aug-2014 21:04:55.0	yes

14 Total Orbits Used

ABSTRACT

We propose infrared and optical imaging of four active galaxies with powerful kpc-scale jets, chosen based on existing radio, X-ray, and gamma-ray observations. The proposed observations present a significant opportunity to advance our understanding of both the kinetic energy carried by jets, and the particle acceleration mechanisms that produce high-energy emission seen hundreds of kiloparsecs from the black hole. All four of the kpc-scale jets have been shown with Chandra observations to have very hard X-ray spectra which has led to the prevailing interpretation that the X-rays are due to inverse-Compton upscattering of CMB photons (IC/CMB) by a jet which is still relativistic on kpc scales. However, very recent work by our group has shown that the gamma-ray flux implied by this mechanism is not apparent in over 5 years of gamma-ray monitoring with the Fermi telescope for several sources, leading us to rule out the IC/CMB mechanism for the nearby source 3C 273 (Meyer et al., 2014). In order to positively rule out the IC/CMB model in the four proposed targets, we require an accurate measurement of the synchrotron spectrum of the jet, in order to exactly predict the gamma-ray spectrum expected and interpret the existing upper limits. As we have shown, the presence of relativistic, synchrotron-emitting electrons necessitates that high-energy IC/CMB emission should be present at a level which depends solely on the speed of the jet, assuming equipartition magnetic fields. Thus, with the HST imaging we propose, we will be able to settle over a decade of ambiguity about the emission mechanism of the X-rays, and place strong limits on the bulk speed of these large-scale jets.

OBSERVING DESCRIPTION

We propose straightforward imaging observations of 4 jet targets in two instruments/bands: All four will be imaged with 1 orbit of WFC3/IR (F160W), as well as 2 orbits of ACS/WFC (F606W), except for the target 1745+624 which will be imaged with 4 orbits of ACS/WFC (F606W), due to a need for higher sensitivity. In the optical observations, roll constraints have been specified to avoid any risk of bleeding from the bright quasar cores or nearby bright stars from "over-running" the 3-8" jet extension from the core which is the actual science target. The proposed exposure times are optimized for detecting the faint jet emission and some mild saturation of the cores is anticipated. For the WFC3/IR observations, we have used a line-type dithering strategy (with roll constraints) to ensure that possible persistence in some pixels from exposure to the bright quasar cores does not land on the jet in subsequent exposures, and to minimize saturating individual pixels repeatedly. Note that we have used POS TARGs in addition to the pre-set pattern containers, both to fill out the remainder of the orbits and for sequential PATTERN containers, to ensure that the pointings continue along the same line without going 'backwards' for the above reasons.

Proposal 13676 - 4C62.29-optical (01) - Solving the X-ray Origin Problem in Kiloparsec-Scale Relativistic Jets: Hubble Provides the Mi...

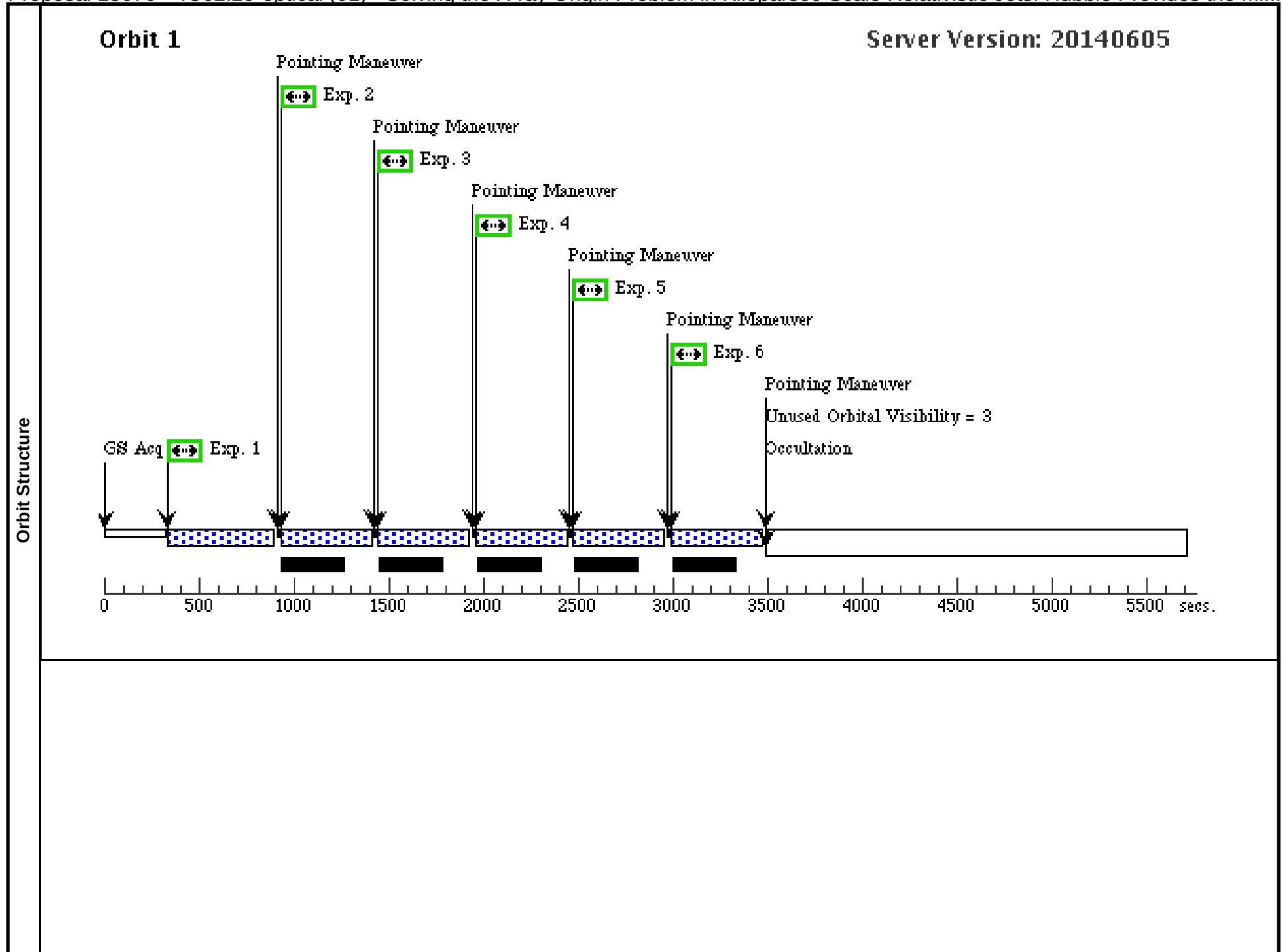
Visit	Proposal 13676, 4C62.29-optical (01), implementation Tue Aug 12 01:04:57 GMT 2014				
	Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC Special Requirements: ORIENT 359D TO 22.5 D; ORIENT 89D TO 112.5 D; ORIENT 179D TO 202.5 D; ORIENT 269D TO 292.5 D <i>Comments: The jet is at ~ 215 deg orientation to the optical point source at the nominal target location. ORIENT constraints for this source are necessary to avoid nearby saturated point sources from producing bleeding/trailing effects which might over-run the jet. In particular, the quasar 'core' associated with the jet we are trying to image is potentially variable, and relatively bright (Vmag ~19). Because it is exactly adjacent to the 3"-long jet, relatively wide avoidance zones were used (+/- 15 degrees). A bright star (17th mag) 20" away is avoided already by these constraints. Another 17th mag star at 12" distance (PA towards the jet is 326 - 342 deg) is also avoided by the given constraints.</i>				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes
	(1)	4C62.29 Alt Name1: 1745+624	RA: 17 46 14.0332 (266.5584717d) Dec: +62 26 54.73 (62.44854d) Equinox: J2000		V=19.51
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>					

Proposal 13676 - 4C62.29-optical (01) - Solving the X-ray Origin Problem in Kiloparsec-Scale Relativistic Jets: Hubble Provides the Mi...

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(1) 4C62.29	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 0,0		358 Secs (358 Secs)	
									[==>]	[1]
	2		(1) 4C62.29	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 0.174,0.185		358 Secs (358 Secs)	
									[==>]	[1]
	3		(1) 4C62.29	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 0.3232,0.1235		358 Secs (358 Secs)	
									[==>]	[1]
	4		(1) 4C62.29	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 0.1005,0.3305		358 Secs (358 Secs)	
									[==>]	[1]
	5		(1) 4C62.29	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 0.5030,0.0460		358 Secs (358 Secs)	
									[==>]	[1]
	6		(1) 4C62.29	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 0.677,0.2310		358 Secs (358 Secs)	
									[==>]	[1]
	7		(1) 4C62.29	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 0.8262,0.1695		390 Secs (390 Secs)	
									[==>]	[2]
	8		(1) 4C62.29	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 0.6035,0.3765		390 Secs (390 Secs)	
									[==>]	[2]
	9		(1) 4C62.29	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 0.1180,0.5180		390 Secs (390 Secs)	
									[==>]	[2]
	10		(1) 4C62.29	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 0.2920,0.7030		390 Secs (390 Secs)	
									[==>]	[2]
	11		(1) 4C62.29	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 0.4412,0.6415		390 Secs (390 Secs)	
									[==>]	[2]
	12		(1) 4C62.29	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 0.2185,0.8485		390 Secs (390 Secs)	
									[==>]	[2]
	13		(1) 4C62.29	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 4,4		390 Secs (390 Secs)	
									[==>]	[3]
	14		(1) 4C62.29	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 4.174,4.1850		390 Secs (390 Secs)	
									[==>]	[3]
	15		(1) 4C62.29	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 4.3232,4.1235		390 Secs (390 Secs)	
									[==>]	[3]
	16		(1) 4C62.29	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 4.1005,4.3305		390 Secs (390 Secs)	
									[==>]	[3]
	17		(1) 4C62.29	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 4.5030,4.0460		390 Secs (390 Secs)	
									[==>]	[3]
	18		(1) 4C62.29	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 4.6770,4.2310		390 Secs (390 Secs)	
									[==>]	[3]
	19		(1) 4C62.29	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 4.8262,4.1695		390 Secs (390 Secs)	
									[==>]	[4]
	20		(1) 4C62.29	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 4.6035,4.3765		390 Secs (390 Secs)	
									[==>]	[4]
	21		(1) 4C62.29	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 4.1180,4.5180		390 Secs (390 Secs)	
									[==>]	[4]
	22		(1) 4C62.29	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 4.2920,4.7030		390 Secs (390 Secs)	
									[==>]	[4]

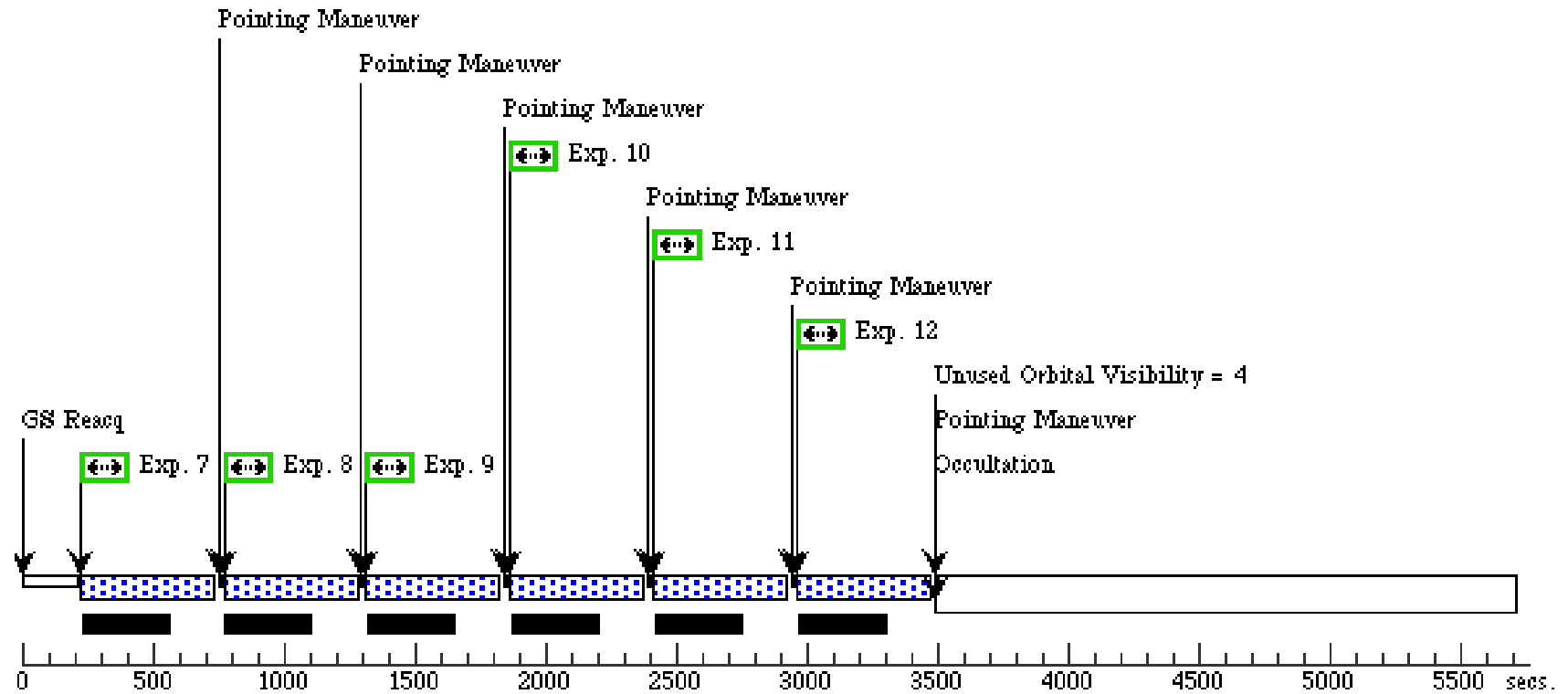
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	23	(1) 4C62.29	ACS/WFC, ACCUM, WFC1	F606W	POS TARG 4.4412,4 .6415	390 Secs (390 Secs)	
						[==>]	[4]
	24	(1) 4C62.29	ACS/WFC, ACCUM, WFC1	F606W	POS TARG 4.2185,4 .8485	390 Secs (390 Secs)	
						[==>]	[4]



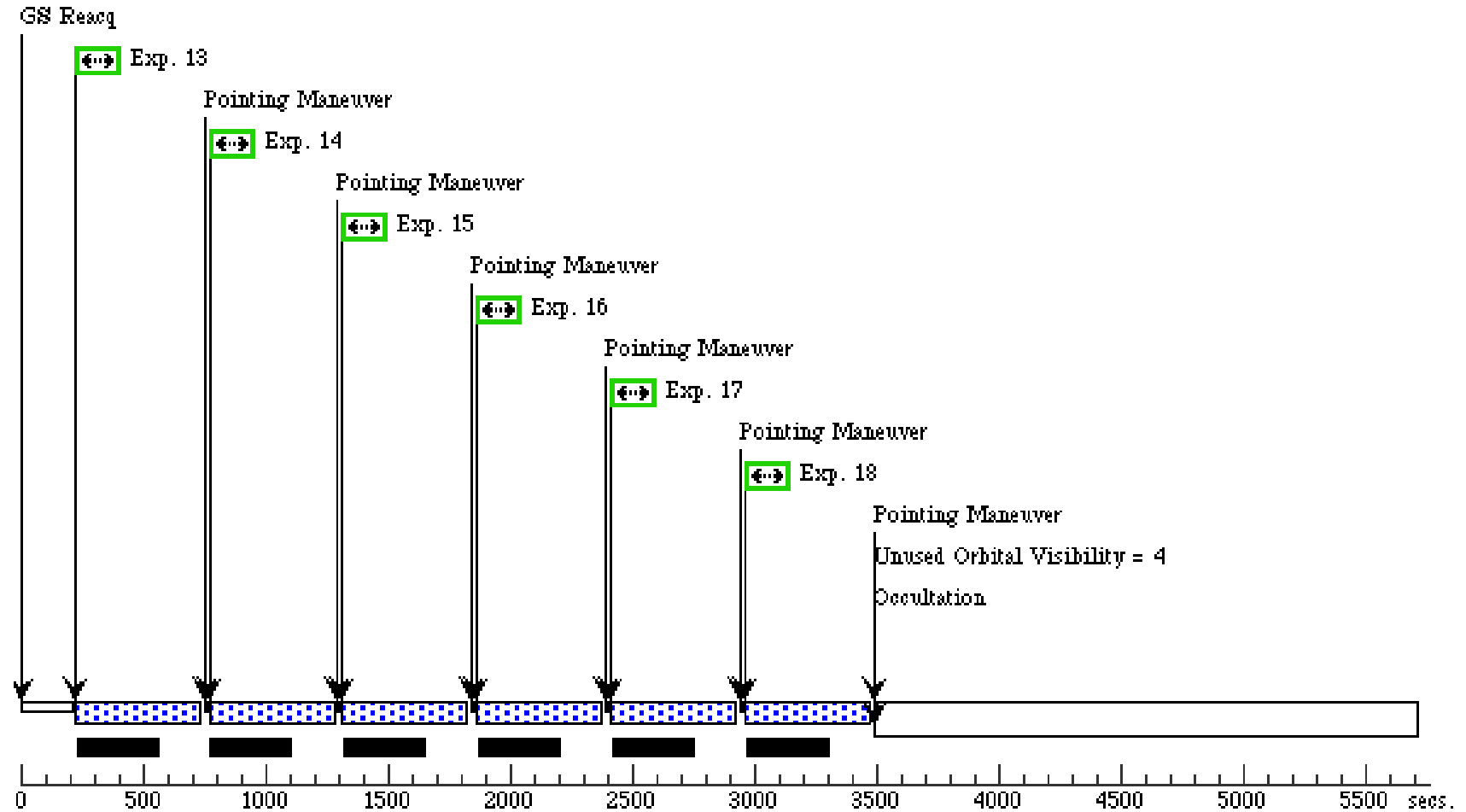
Orbit 2

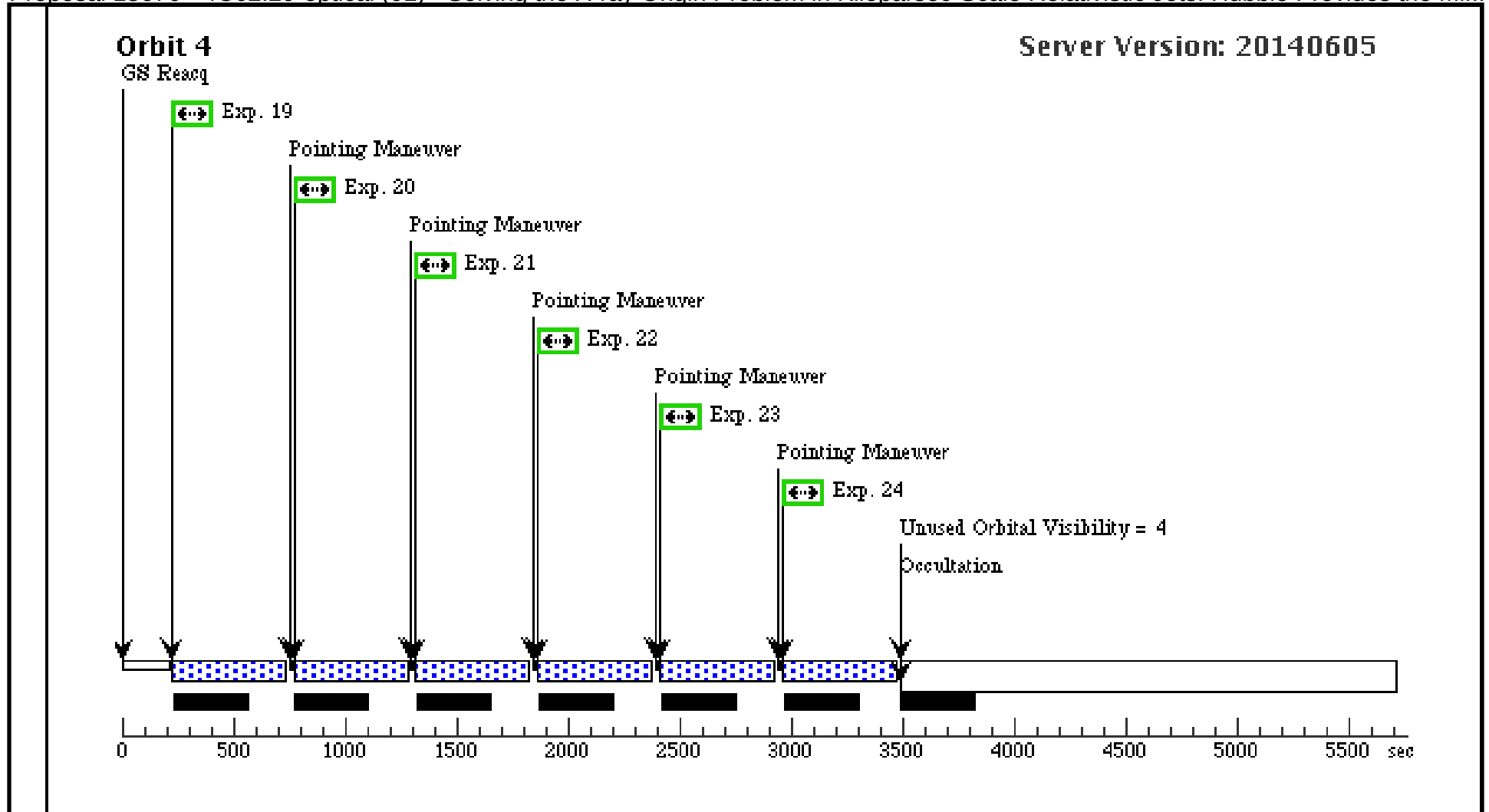
Server Version: 20140605



Orbit 3

Server Version: 20140605





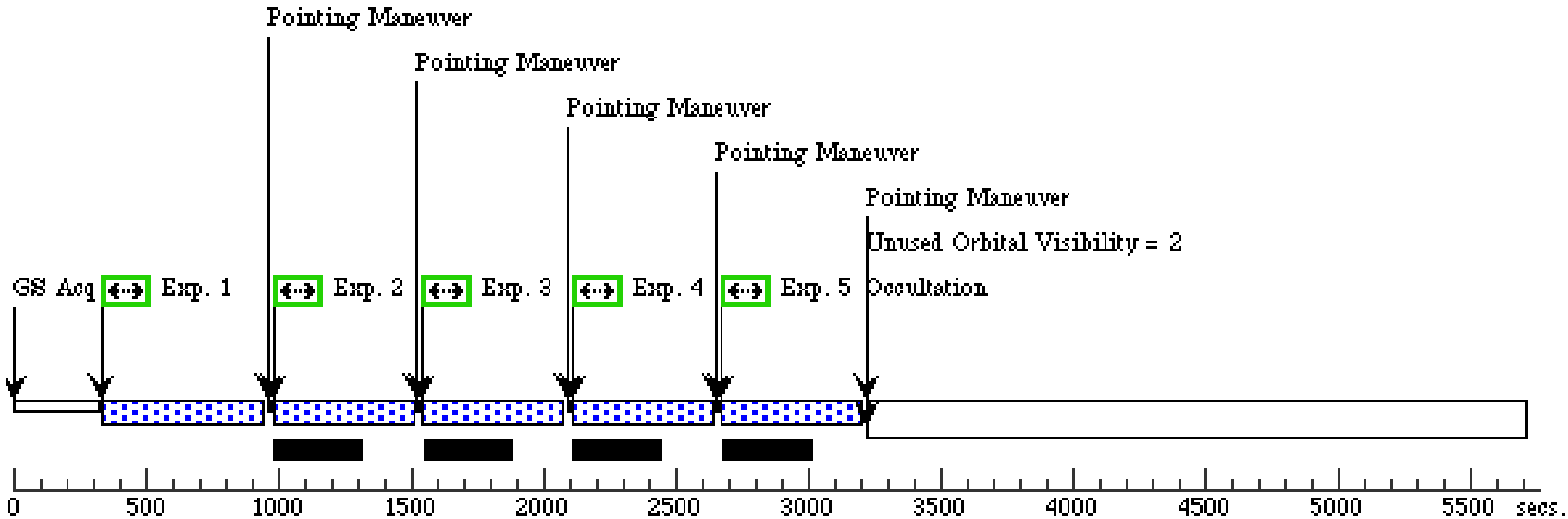
Proposal 13676 - 4c08.64-optical (02) - Solving the X-ray Origin Problem in Kiloparsec-Scale Relativistic Jets: Hubble Provides the Mi...

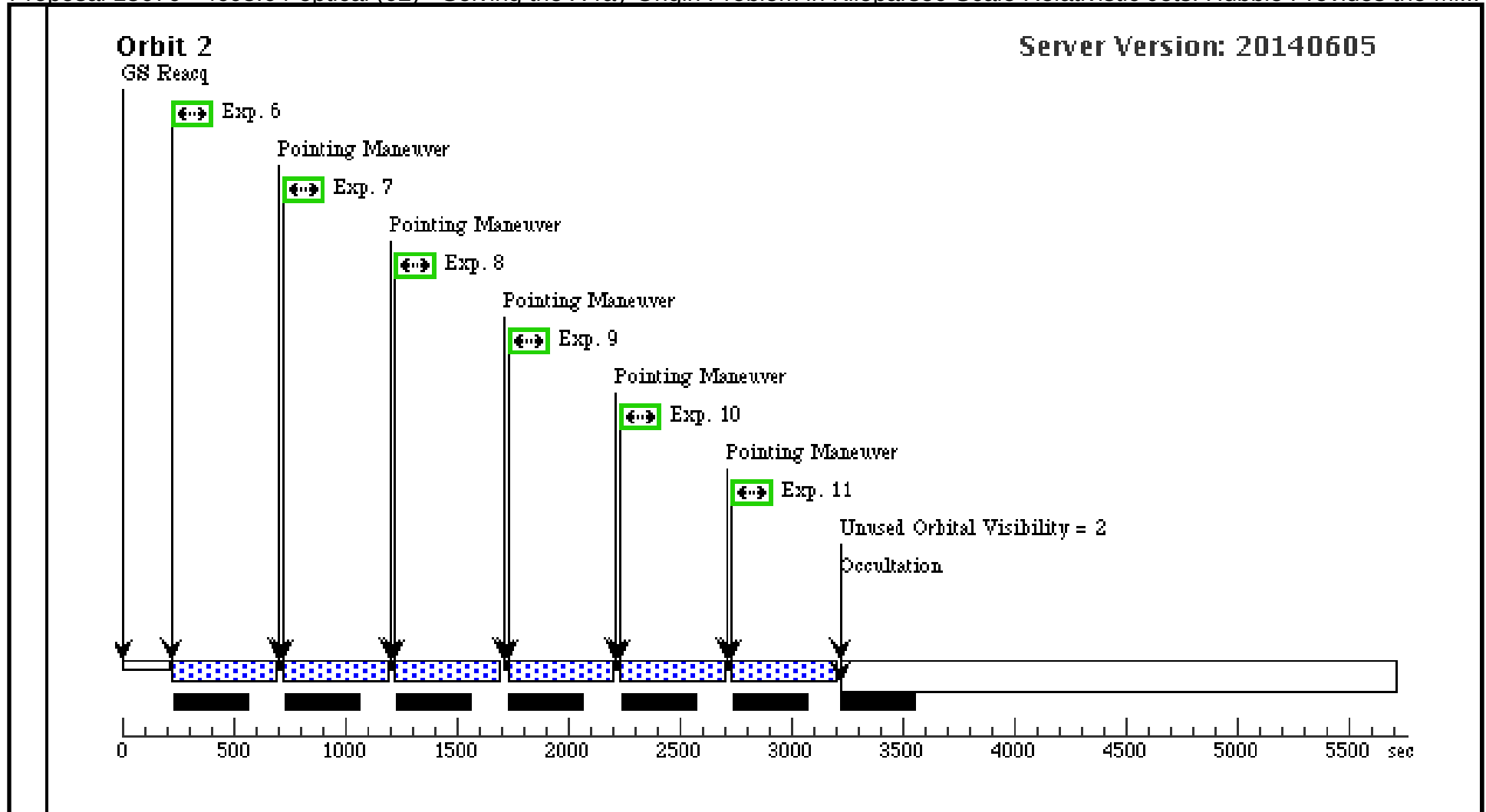
Visit	Proposal 13676, 4c08.64-optical (02), implementation										Tue Aug 12 01:04:57 GMT 2014	
	Diagnostic Status: No Diagnostics											
	Scientific Instruments: ACS/WFC											
	Special Requirements: ORIENT 17.5D TO 27.5 D; ORIENT 72.5D TO 77.5 D; ORIENT 107.5D TO 117.5 D; ORIENT 162.5D TO 167.5 D; ORIENT 197.5D TO 207.5 D; ORIENT 252.5D TO 257.5 D; ORIENT 287.5D TO 297.5 D; ORIENT 342.5D TO 347.5 D Comments: The jet is located at PA ~ 180 deg relative to the bright point source at the nominal target location, with an extent of 8". ORIENT constraints are given to avoid any saturation bleeding/trailing from the core and from a bright (16th mag) star 15" from the target from over-running the jet region. The only other bright star (Vmag 14.5) in the vicinity is also avoided by these constraints.											
Fixed Targets	#	Name	Target Coordinates			Targ. Coord. Corrections		Fluxes		Miscellaneous		
	(2)	4C08.64	RA: 22 12 1.5933 (333.0066388d)					V=18.5		Reference Frame: SIMBAD		
		Alt Name1: 2209+080	Dec: +08 19 16.54 (8.32126d)									
			Equinox: J2000									
	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.											
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit	
	1		(2) 4C08.64	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 0,0; GS ACQ SCENARI O BASE1B3		407 Secs (407 Secs)			
									[==>]		[1]	
	2		(2) 4C08.64	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 0.15914, 0.23969		407 Secs (407 Secs)			
									[==>]		[1]	
	3		(2) 4C08.64	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 0.31641, 0.08319		407 Secs (407 Secs)			
									[==>]		[1]	
	4		(2) 4C08.64	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 0.07990, 0.19413		407 Secs (407 Secs)			
									[==>]		[1]	
	5		(2) 4C08.64	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 0.28771, 0.28896		407 Secs (407 Secs)			
									[==>]		[1]	
	6		(2) 4C08.64	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 4,4		345 Secs (345 Secs)			
									[==>]		[2]	
	7		(2) 4C08.64	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 4.20646, 4.14754		345 Secs (345 Secs)			
								[==>]		[2]		
8		(2) 4C08.64	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 4.41257, 4.24554		345 Secs (345 Secs)				
								[==>]		[2]		
9		(2) 4C08.64	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 4.12505, 4.34768		345 Secs (345 Secs)				
								[==>]		[2]		
10		(2) 4C08.64	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 4.33111, 4.42753		345 Secs (345 Secs)				
								[==>]		[2]		
11		(2) 4C08.64	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 4.53746, 4.56020		345 Secs (345 Secs)				
								[==>]		[2]		

Orbit Structure

Orbit 1

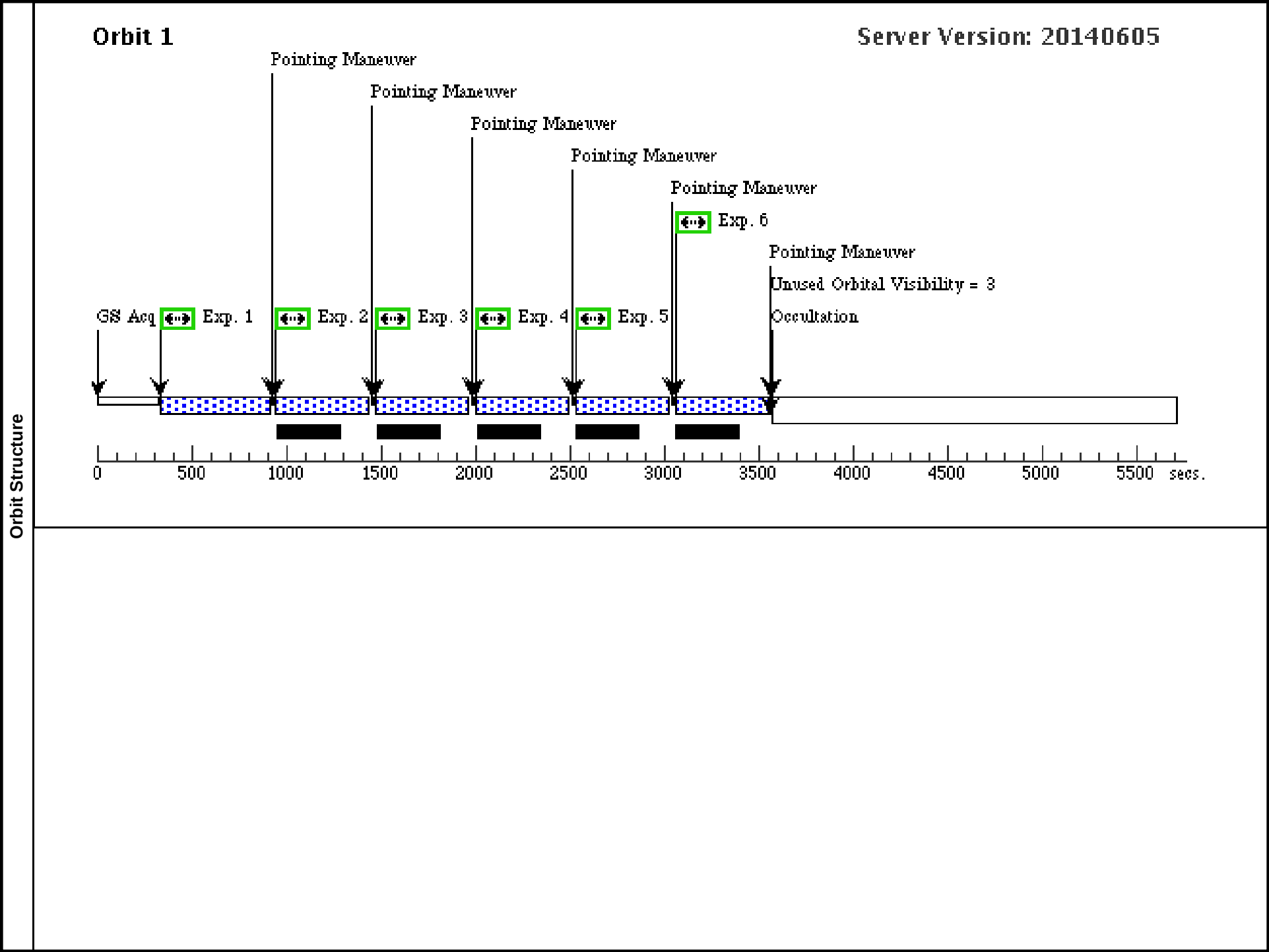
Server Version: 20140605





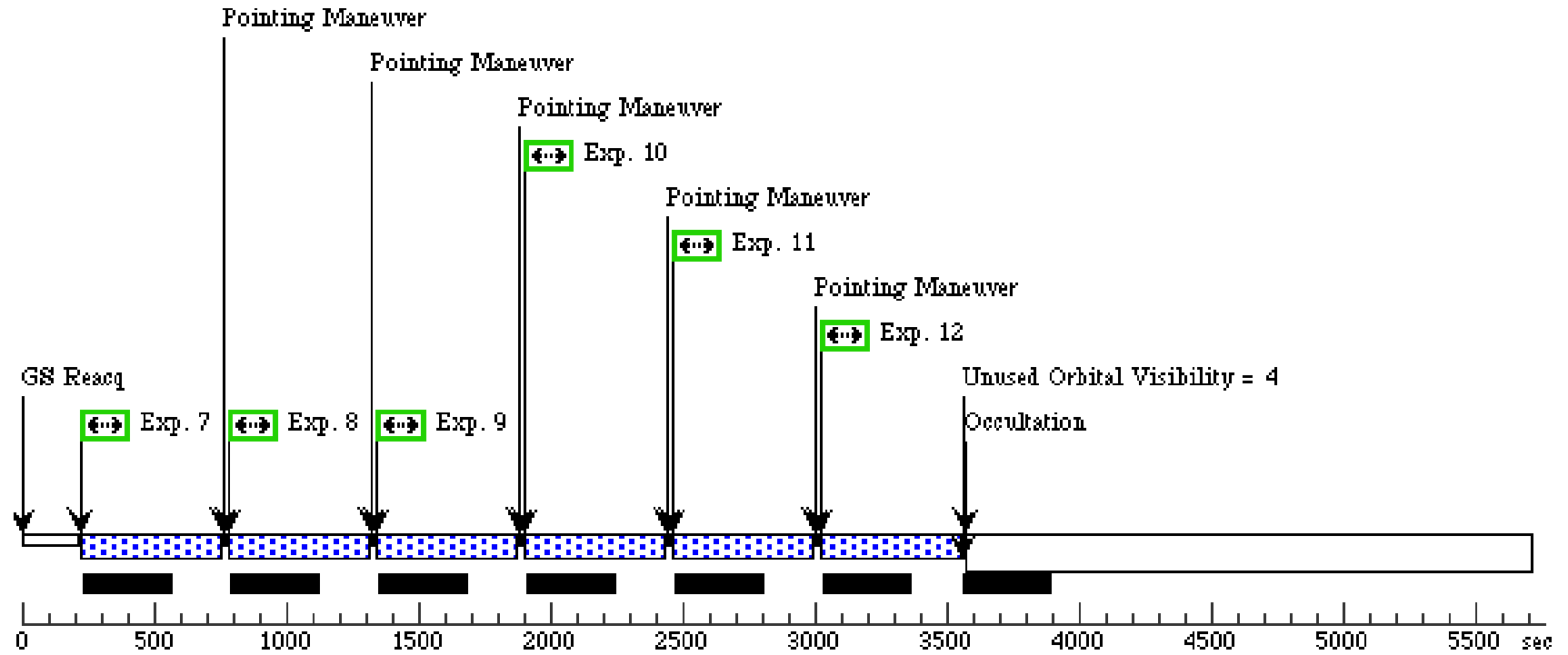
Proposal 13676 - 4c65.15-optical (03) - Solving the X-ray Origin Problem in Kiloparsec-Scale Relativistic Jets: Hubble Provides the Mi...

Visit	Proposal 13676, 4c65.15-optical (03), implementation										Tue Aug 12 01:04:58 GMT 2014	
	Diagnostic Status: No Diagnostics											
	Scientific Instruments: ACS/WFC											
	Special Requirements: ORIENT 307.5D TO 7.5 D; ORIENT 127.5D TO 187.5 D											
Comments: The jet of this source is two-sided, with the dominant side (science target) directed to the southwest of the optical point source core that is the nominal target location. This jet goes through a 90 degree bend, so the ORIENT constraints are set to avoid any bleeding/saturation streaks from the core (17th mag) from over-running the jet region. There are no other bright stars in the vicinity.												
Fixed Targets	#	Name	Target Coordinates			Targ. Coord. Corrections		Fluxes		Miscellaneous		
	(3)	4C65.15	RA: 13 25 29.7028 (201.3737617d)					V=17.48		Reference Frame: SIMBAD		
		Alt Name1: 1323+655	Dec: +65 15 13.29 (65.25369d)									
Equinox: J2000												
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.												
Exposures	#	Label	Target	Config,Mode,Aperture		Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1		(3) 4C65.15	ACS/WFC, ACCUM, WFC1		F606W		POS TARG 0,0		371 Secs (371 Secs)		
										[==>]		[1]
	2		(3) 4C65.15	ACS/WFC, ACCUM, WFC1		F606W		POS TARG 0.20646, 0.14754		371 Secs (371 Secs)		
										[==>]		[1]
	3		(3) 4C65.15	ACS/WFC, ACCUM, WFC1		F606W		POS TARG 0.41257, 0.24554		371 Secs (371 Secs)		
										[==>]		[1]
	4		(3) 4C65.15	ACS/WFC, ACCUM, WFC1		F606W		POS TARG 0.12505, 0.34768		371 Secs (371 Secs)		
										[==>]		[1]
	5		(3) 4C65.15	ACS/WFC, ACCUM, WFC1		F606W		POS TARG 0.33111, 0.42753		371 Secs (371 Secs)		
										[==>]		[1]
	6		(3) 4C65.15	ACS/WFC, ACCUM, WFC1		F606W		POS TARG 0.53746, 0.56020		371 Secs (371 Secs)		
										[==>]		[1]
	7		(3) 4C65.15	ACS/WFC, ACCUM, WFC1		F606W		POS TARG 4,4		403 Secs (403 Secs)		
										[==>]		[2]
	8		(3) 4C65.15	ACS/WFC, ACCUM, WFC1		F606W		POS TARG 4.20646, 4.14754		403 Secs (403 Secs)		
										[==>]		[2]
	9		(3) 4C65.15	ACS/WFC, ACCUM, WFC1		F606W		POS TARG 4.41257, 4.24554		403 Secs (403 Secs)		
										[==>]		[2]
	10		(3) 4C65.15	ACS/WFC, ACCUM, WFC1		F606W		POS TARG 4.12505, 4.34768		403 Secs (403 Secs)		
										[==>]		[2]
	11		(3) 4C65.15	ACS/WFC, ACCUM, WFC1		F606W		POS TARG 4.33111, 4.42753		403 Secs (403 Secs)		
										[==>]		[2]
	12		(3) 4C65.15	ACS/WFC, ACCUM, WFC1		F606W		POS TARG 4.53746, 4.56020		403 Secs (403 Secs)		
										[==>]		[2]



Orbit 2

Server Version: 20140605



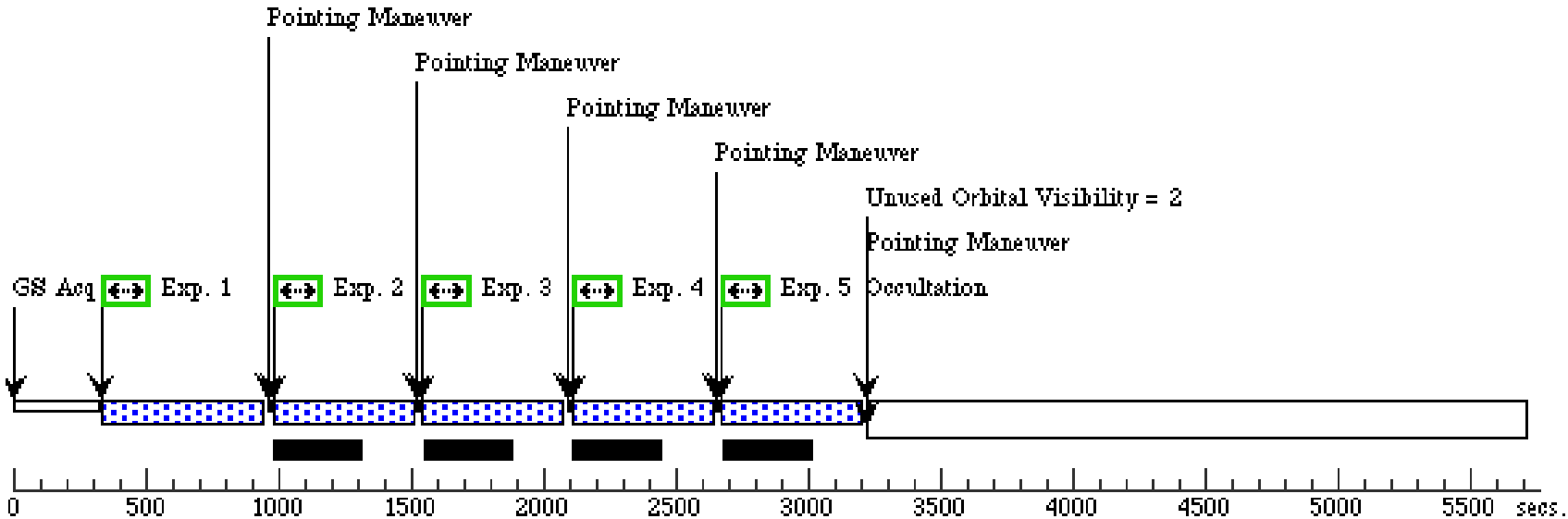
Proposal 13676 - 4c00.58-optical (04) - Solving the X-ray Origin Problem in Kiloparsec-Scale Relativistic Jets: Hubble Provides the Mi...

Visit	Proposal 13676, 4c00.58-optical (04), implementation										Tue Aug 12 01:04:58 GMT 2014	
	Diagnostic Status: No Diagnostics											
	Scientific Instruments: ACS/WFC											
	Special Requirements: ORIENT 2.5D TO 47.5 D; ORIENT 92.5D TO 137.5 D; ORIENT 182.5D TO 227.5 D; ORIENT 272.5D TO 317.5 D											
Comments: The jet extends (with curvature) through PA 45 to 85 degrees from the optical core at the target location, with a total extent of ~ 8". The nearest bright stars (~ 17th mag) are ~ 30" distant and should not present any problems from saturation bleeding. The ORIENT constraints are thus only related to the relatively bright quasar core (17th magnitude, variable), to avoid bleeding over-running the jet area.												
Fixed Targets	#	Name	Target Coordinates			Targ. Coord. Corrections		Fluxes	Miscellaneous			
	(4)	4C00.58	RA: 16 06 12.7300 (241.5530417d)					V=17.5	Reference Frame: SIMBAD			
		Alt Name1: 1603+001	Dec: +00 00 27.36 (.00760d)									
			Equinox: J2000									
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.												
Exposures	#	Label	Target	Config,Mode,Aperture		Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1		(4) 4C00.58	ACS/WFC, ACCUM, WFC1		F606W		POS TARG 0,0		407 Secs (407 Secs)		
										[==>]		[1]
	2		(4) 4C00.58	ACS/WFC, ACCUM, WFC1		F606W		POS TARG 0.15914, 0.23969		407 Secs (407 Secs)		
										[==>]		[1]
	3		(4) 4C00.58	ACS/WFC, ACCUM, WFC1		F606W		POS TARG 0.31641, 0.08319		407 Secs (407 Secs)		
										[==>]		[1]
	4		(4) 4C00.58	ACS/WFC, ACCUM, WFC1		F606W		POS TARG 0.07990, 0.19413		407 Secs (407 Secs)		
										[==>]		[1]
	5		(4) 4C00.58	ACS/WFC, ACCUM, WFC1		F606W		POS TARG 0.28771, 0.28896		407 Secs (407 Secs)		
										[==>]		[1]
	6		(4) 4C00.58	ACS/WFC, ACCUM, WFC1		F606W		POS TARG 4,4		345 Secs (345 Secs)		
										[==>]		[2]
	7		(4) 4C00.58	ACS/WFC, ACCUM, WFC1		F606W		POS TARG 4.20646, 4.14754		345 Secs (345 Secs)		
									[==>]		[2]	
8		(4) 4C00.58	ACS/WFC, ACCUM, WFC1		F606W		POS TARG 4.41257, 4.24554		345 Secs (345 Secs)			
									[==>]		[2]	
9		(4) 4C00.58	ACS/WFC, ACCUM, WFC1		F606W		POS TARG 4.12505, 4.34768		345 Secs (345 Secs)			
									[==>]		[2]	
10		(4) 4C00.58	ACS/WFC, ACCUM, WFC1		F606W		POS TARG 4.33111, 4.42753		345 Secs (345 Secs)			
									[==>]		[2]	
11		(4) 4C00.58	ACS/WFC, ACCUM, WFC1		F606W		POS TARG 4.53746, 4.56020		345 Secs (345 Secs)			
									[==>]		[2]	

Orbit Structure

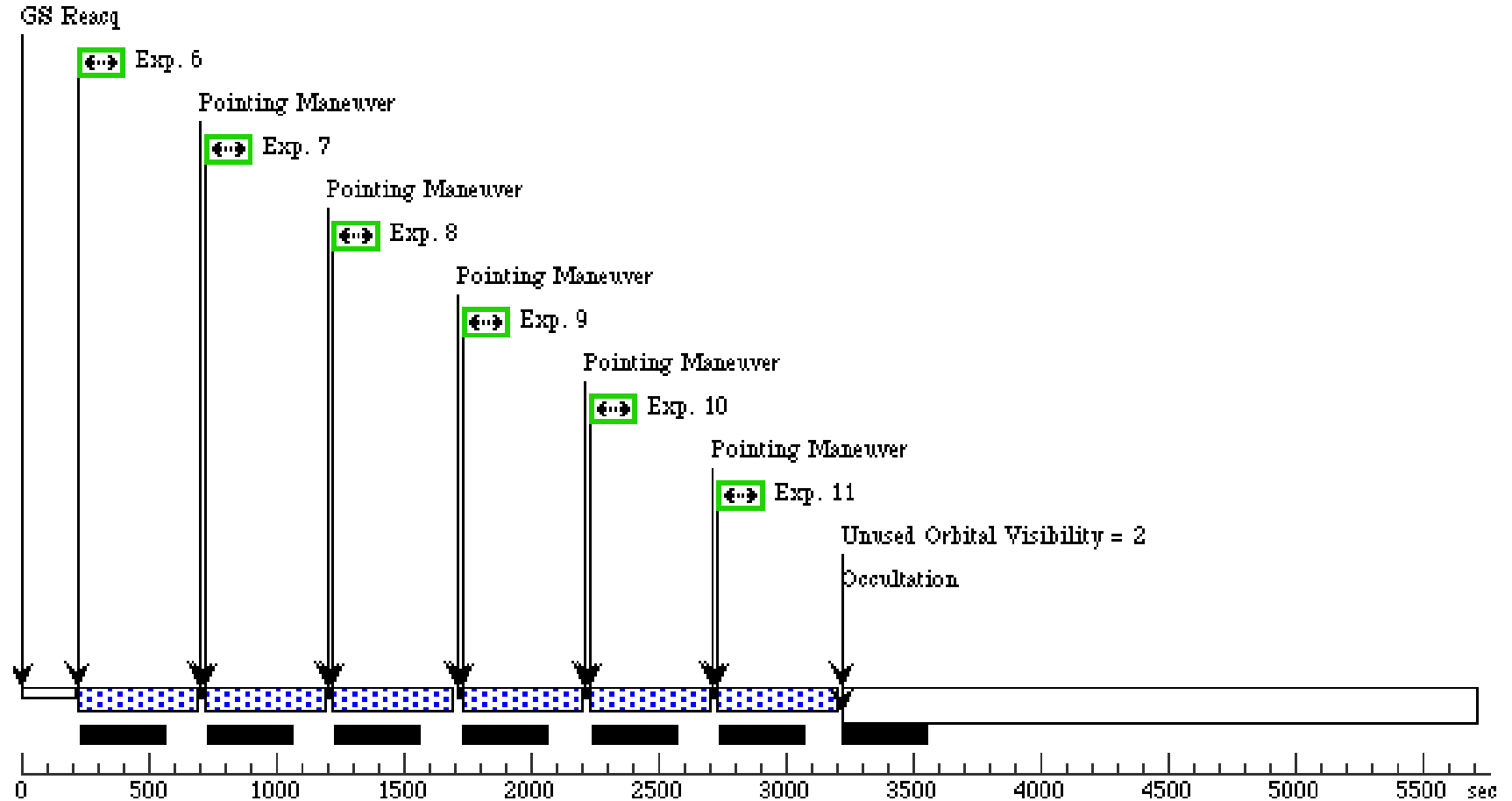
Orbit 1

Server Version: 20140605



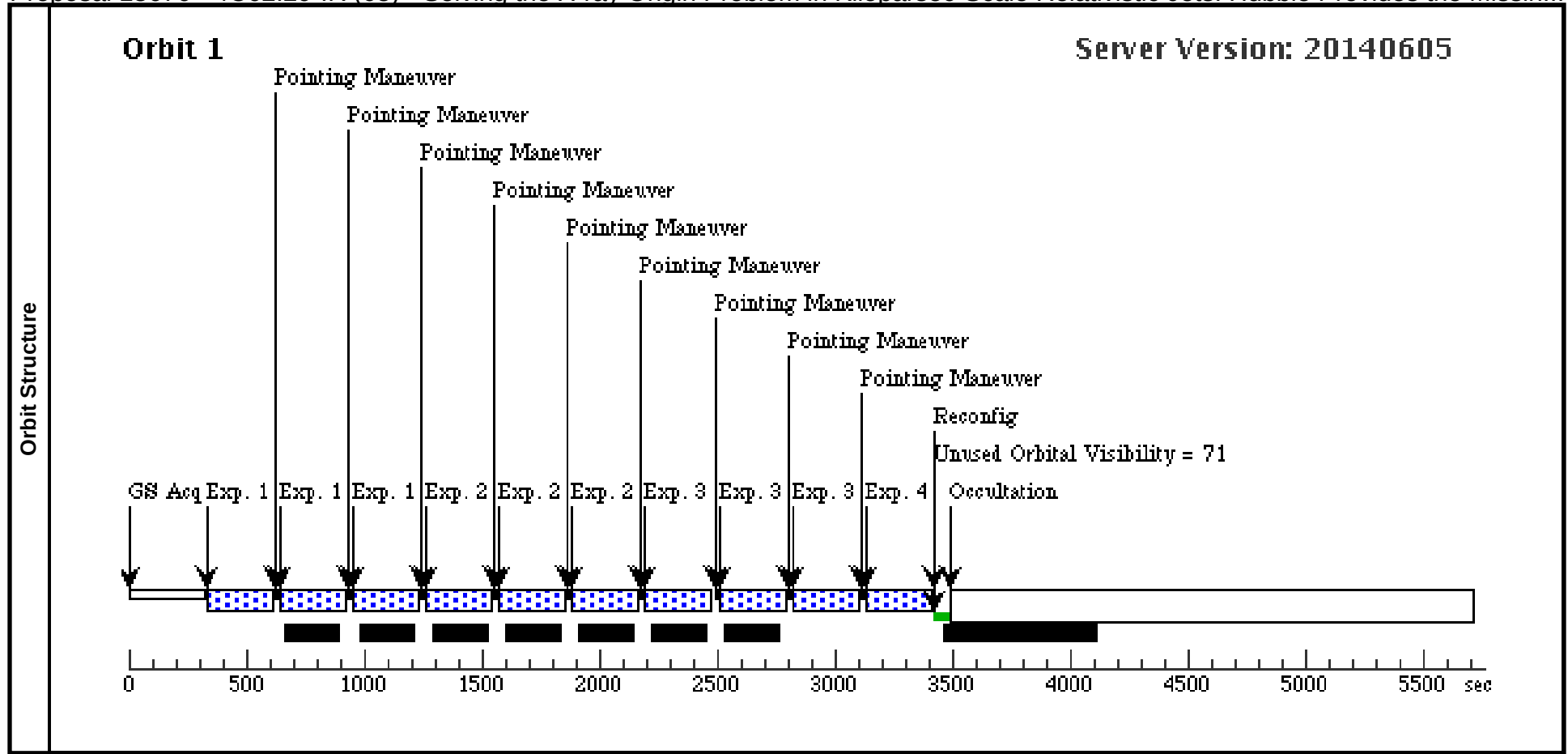
Orbit 2

Server Version: 20140605



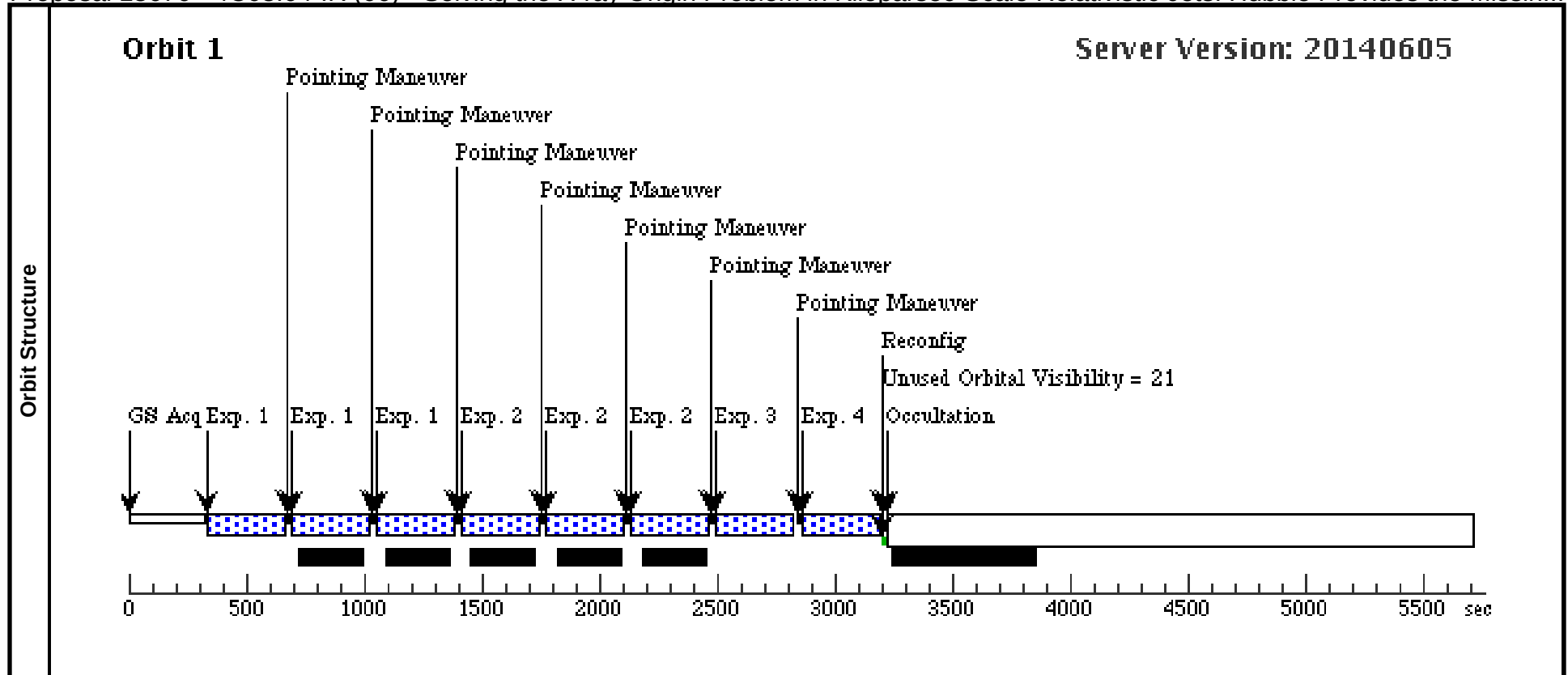
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Visit	Proposal 13676, 4C62.29-IR (05), implementation					Tue Aug 12 01:04:58 GMT 2014				
	Diagnostic Status: No Diagnostics									
	Scientific Instruments: WFC3/IR									
	Special Requirements: ORIENT 100D TO 165 D									
	Comments: The bright quasar core of this source is a concern for saturation of the detector. We used the WFC3/IR ETC, extrapolating from a 1e-4 Jy flux at 1 micrometer (photometry from NED) using a spectral index of 0.65 in F_lambda. Saturation is expected at ~ 116 seconds of exposure.									
Of the jet components, we used the radio-to-X-ray spectral index of -1.1 (in F_lambda) to extrapolate an upper limit of the IR flux (most likely lower) expected from the brightest knot, which occurs at the end (terminal hotspot). The time-to-saturation was 17,000 seconds, so our 360 second observations should have no risk of saturation from any of the scientific targets. A dithering strategy has been used which avoids any persistence from bright sources from over-running the jet.										
Patterns	#	Primary Pattern			Secondary Pattern		Exposures			
	(1)	Pattern Type=WFC3-IR-DITHER-LINE-3PT Coordinate Frame=POS-TARG Pattern Orientation=41.788 Purpose=DITHER Angle Between Sides= Number Of Points=3 Center Pattern=false Point Spacing=0.605 Line Spacing=					(1), (2), (3)			
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	4C62.29	RA: 17 46 14.0332 (266.5584717d)		V=19.51	Reference Frame: SIMBAD				
		Alt Name1: 1745+624	Dec: +62 26 54.73 (62.44854d) Equinox: J2000							
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(1) 4C62.29	WFC3/IR, MULTIACCUM, IR	F160W	SAMP-SEQ=STEP5 0; NSAMP=10		Pattern 1, Exps 1-1 in 4C62.29-IR (05) (1)	249.23203 Secs (747.696 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[1]
	2		(1) 4C62.29	WFC3/IR, MULTIACCUM, IR	F160W	SAMP-SEQ=STEP5 0; NSAMP=10	POS TARG 1,1	Pattern 1, Exps 2-2 in 4C62.29-IR (05) (1)	249.23203 Secs (747.696 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[1]
	3		(1) 4C62.29	WFC3/IR, MULTIACCUM, IR	F160W	SAMP-SEQ=STEP5 0; NSAMP=10	POS TARG 2,2	Pattern 1, Exps 3-3 in 4C62.29-IR (05) (1)	249.23203 Secs (747.696 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[1]
	4		(1) 4C62.29	WFC3/IR, MULTIACCUM, IR	F160W	SAMP-SEQ=STEP5 0; NSAMP=10	POS TARG 3,3		249.23203 Secs (249.232 Secs) [==>]	[1]



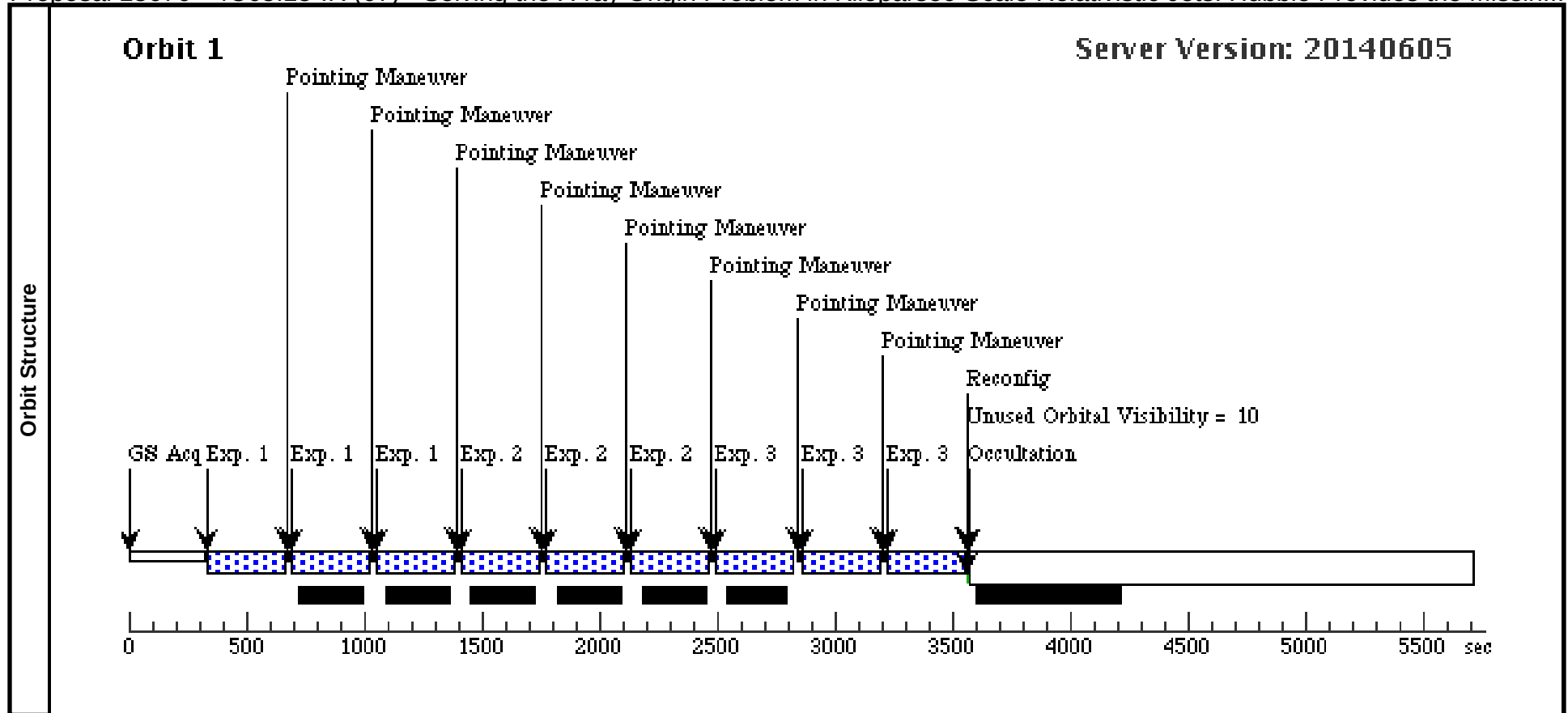
Proposal 13676 - 4C08.64-IR (06) - Solving the X-ray Origin Problem in Kiloparsec-Scale Relativistic Jets: Hubble Provides the Missin...

Visit	Proposal 13676, 4C08.64-IR (06), implementation										Tue Aug 12 01:04:58 GMT 2014		
	Diagnostic Status: No Diagnostics												
	Scientific Instruments: WFC3/IR												
	Special Requirements: ORIENT 60D TO 120 D												
Patterns	#	Primary Pattern					Secondary Pattern					Exposures	
	(2)	Pattern Type=WFC3-IR-DITHER-LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.605 Line Spacing=			Coordinate Frame=POS-TARG Pattern Orientation=221.788 Angle Between Sides= Center Pattern=false							(1), (2)	
Fixed Targets	#	Name		Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous			
	(2)	4C08.64		RA: 22 12 1.5933 (333.0066388d)				V=18.5		Reference Frame: SIMBAD			
		Alt Name1: 2209+080		Dec: +08 19 16.54 (8.32126d)									
				Equinox: J2000									
	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.												
Exposures	#	Label	Target	Config,Mode,Aperture		Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit	
	1		(2) 4C08.64	WFC3/IR, MULTIACCUM, IR		F160W	SAMP-SEQ=STEP50; NSAMP=11	GS ACQ SCENARIO BASE1B3	Pattern 2, Exps 1-1 in 4C08.64-IR (06) (2)	299.232481 Secs (897.697 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]		[1]	
	2		(2) 4C08.64	WFC3/IR, MULTIACCUM, IR		F160W	SAMP-SEQ=STEP50; NSAMP=11	POS TARG -1,-1	Pattern 2, Exps 2-2 in 4C08.64-IR (06) (2)	299.232481 Secs (897.697 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]		[1]	
	3		(2) 4C08.64	WFC3/IR, MULTIACCUM, IR		F160W	SAMP-SEQ=STEP50; NSAMP=11	POS TARG -2,-2		299.232481 Secs (299.232 Secs) [==>]		[1]	
	4		(2) 4C08.64	WFC3/IR, MULTIACCUM, IR		F160W	SAMP-SEQ=STEP50; NSAMP=11	POS TARG -2.5,-2.5		299.232481 Secs (299.232 Secs) [==>]		[1]	



Proposal 13676 - 4C65.15-IR (07) - Solving the X-ray Origin Problem in Kiloparsec-Scale Relativistic Jets: Hubble Provides the Missin...

Visit	Proposal 13676, 4C65.15-IR (07), implementation										Tue Aug 12 01:04:58 GMT 2014	
	Diagnostic Status: No Diagnostics											
	Scientific Instruments: WFC3/IR											
	Special Requirements: ORIENT 330D TO 360 D											
Patterns	#	Primary Pattern				Secondary Pattern				Exposures		
	(1)	Pattern Type=WFC3-IR-DITHER-LINE-3PT Coordinate Frame=POS-TARG Pattern Orientation=41.788 Purpose=DITHER Angle Between Sides= Number Of Points=3 Center Pattern=false Point Spacing=0.605 Line Spacing=								(1), (2), (3)		
Fixed Targets	#	Name		Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous		
	(3)	4C65.15		RA: 13 25 29.7028 (201.3737617d)				V=17.48		Reference Frame: SIMBAD		
		Alt Name1: 1323+655		Dec: +65 15 13.29 (65.25369d)								
				Equinox: J2000								
	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.											
Exposures	#	Label	Target	Config,Mode,Aperture		Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1		(3) 4C65.15	WFC3/IR, MULTIACCUM, IR		F160W	SAMP-SEQ=STEP5 0; NSAMP=11		Pattern 1, Exps 1-1 in 4C65.15-IR (07) (1)	299.232481 Secs (897.697 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]		
												[1]
	2		(3) 4C65.15	WFC3/IR, MULTIACCUM, IR		F160W	SAMP-SEQ=STEP5 0; NSAMP=11	POS TARG 1,1	Pattern 1, Exps 2-2 in 4C65.15-IR (07) (1)	299.232481 Secs (897.697 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]		
												[1]
3		(3) 4C65.15	WFC3/IR, MULTIACCUM, IR		F160W	SAMP-SEQ=STEP5 0; NSAMP=11	POS TARG 2,2	Pattern 1, Exps 3-3 in 4C65.15-IR (07) (1)	299.232481 Secs (897.697 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]			
												[1]



Proposal 13676 - 4C00.58-IR (08) - Solving the X-ray Origin Problem in Kiloparsec-Scale Relativistic Jets: Hubble Provides the Missin...

Visit	Proposal 13676, 4C00.58-IR (08), implementation										Tue Aug 12 01:04:58 GMT 2014		
	Diagnostic Status: No Diagnostics												
	Scientific Instruments: WFC3/IR												
	Special Requirements: ORIENT 130D TO 185 D												
Patterns	#	Primary Pattern					Secondary Pattern					Exposures	
	(2)	Pattern Type=WFC3-IR-DITHER-LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.605 Line Spacing=			Coordinate Frame=POS-TARG Pattern Orientation=221.788 Angle Between Sides= Center Pattern=false								(1), (2)
Fixed Targets	#	Name		Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous			
	(4)	4C00.58		RA: 16 06 12.7300 (241.5530417d)				V=17.5		Reference Frame: SIMBAD			
		Alt Name1: 1603+001		Dec: +00 00 27.36 (.00760d)									
				Equinox: J2000									
	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.												
Exposures	#	Label	Target	Config,Mode,Aperture		Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit	
	1		(4) 4C00.58	WFC3/IR, MULTIACCUM, IR		F160W	SAMP-SEQ=SPARS 25; NSAMP=15		Pattern 2, Exps 1-1 in 4C00.58-IR (08) (2)	352.939501 Secs (1058.819 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]		[1]	
	2		(4) 4C00.58	WFC3/IR, MULTIACCUM, IR		F160W	SAMP-SEQ=SPARS 25; NSAMP=15	POS TARG -1,-1	Pattern 2, Exps 2-2 in 4C00.58-IR (08) (2)	352.939501 Secs (1058.819 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]		[1]	
	3		(4) 4C00.58	WFC3/IR, MULTIACCUM, IR		F160W	SAMP-SEQ=SPARS 25; NSAMP=15	POS TARG -2,-2		352.939501 Secs (352.94 Secs) [==>]		[1]	

