



13688 - A clear patch in the dark age Universe? Looking for reionization sources around two bright Ly-alpha emitting galaxies at $z=7$

Cycle: 22, Proposal Category: GO

(Availability Mode: SUPPORTED)

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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) BDF-3299	WFC3/IR	3	17-Jun-2015 08:20:59.0	yes
02	(2) BDF-521	WFC3/IR	3	17-Jun-2015 08:21:02.0	yes
03	(1) BDF-3299	ACS/WFC	3	17-Jun-2015 08:21:05.0	yes
04	(1) BDF-3299	ACS/WFC	2	17-Jun-2015 08:21:08.0	yes
05	(2) BDF-521	ACS/WFC	3	17-Jun-2015 08:21:11.0	yes
06	(2) BDF-521	ACS/WFC	2	17-Jun-2015 08:21:14.0	yes
56	(2) BDF-521	ACS/WFC	2	17-Jun-2015 08:21:15.0	yes

18 Total Orbits Used

ABSTRACT

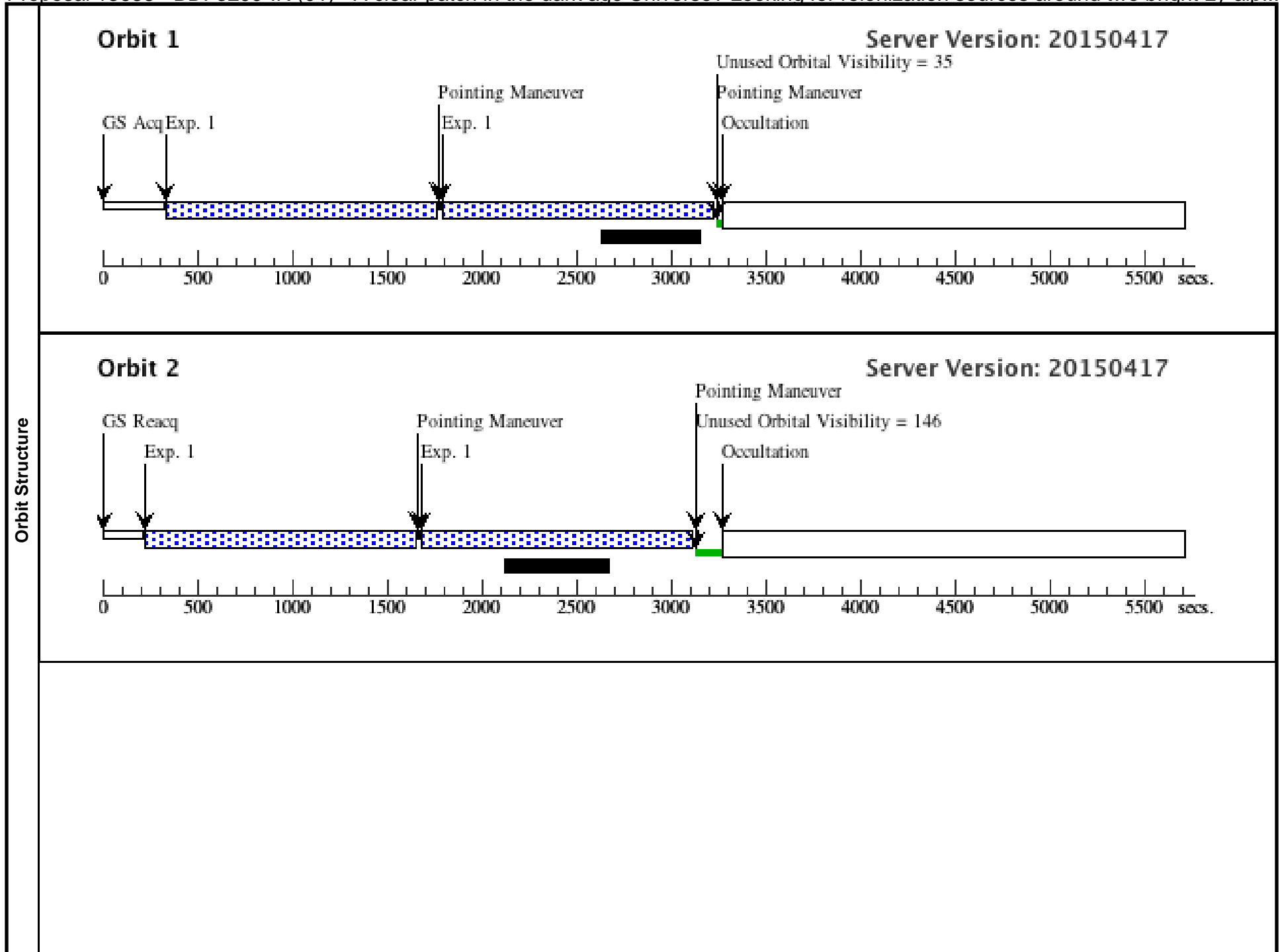
The last few years have seen a number of discoveries that provided the first glimpse of the Universe at $z > 7$ using both space and ground-based telescopes. The spectroscopic determination of a significant decrease at $z > 6$ of the Ly-alpha emitter fraction among Lyman break galaxies (LBGs) has been interpreted as evidence for a rapid increase of the neutral HI in the inter-galactic medium (IGM). Among the different lines of sight explored so far, the BDF field stands out as a peculiar area since it contains two bright, high EW, Ly-alpha emitting galaxies at $z = 7.008$ and $z = 7.109$. However, their UV luminosity is not sufficient to generate an ionized region large enough to explain the observability of their Ly-alpha lines: the close physical distance between the two objects (4.4Mpc) thus suggests that they might be included in the same, large HII bubble which is ionized thanks to contribution of a yet undetected population of fainter sources. Indeed, theoretical models predict that a factor of 4-10 overdensity of z -dropout galaxies with respect to the available, robust determinations of the $z \sim 7$ UV LF, should be detected by pushing the detection limits to $Y = 27.5$ ($M(UV) = -19.5$).

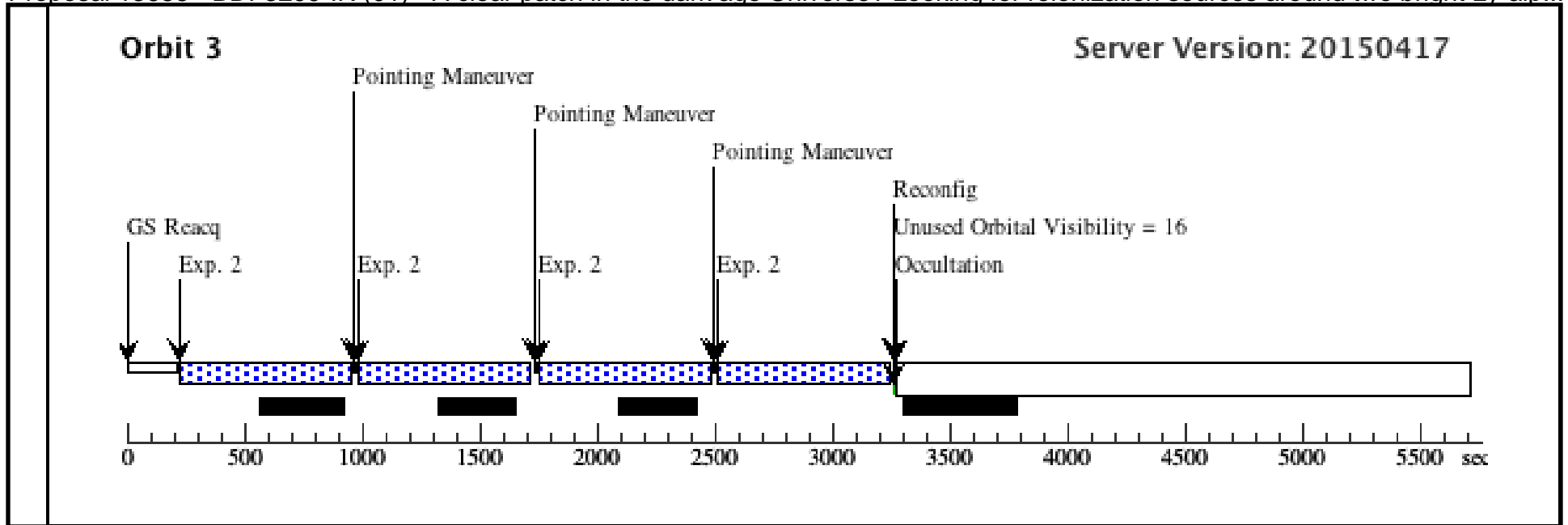
A small investment of HST time will allow us to perform a direct test of these theoretical predictions by searching for additional ionizing sources through standard optical/near IR photometric criteria. With the proposed observations we will be able to confirm whether the BDF area is the first re-ionized "bubble" ever detected in the early Universe. This will help us to understand the earliest phases of galaxy formation and see the process of reionization caught in the act.

Proposal 13688 - BDF3299-IR (01) - A clear patch in the dark age Universe? Looking for reionization sources around two bright Ly- α ...

Wed Jun 17 12:21:17 GMT 2015

Visit	Proposal 13688, BDF3299-IR (01), completed 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=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1), (2)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	BDF-3299	RA: 22 28 8.9133 (337.0371388d) Dec: -35 09 29.40 (-35.15817d) Equinox: J2000		V=25.0+/-5.0	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F105W-329 9-2orbits	(1) BDF-3299	WFC3/IR, MULTIACCUM, IR-FIX	F105W	NSAMP=15; SAMP-SEQ=SPAR S100		Pattern 1, Exps 1-1 in BDF3299-IR (01) (1)	1402.936813 Secs (5611.747 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]
										[2]
	2	F105W-329 9-1orbit	(1) BDF-3299	WFC3/IR, MULTIACCUM, IR-FIX	F105W	NSAMP=15; SAMP-SEQ=SPAR S50		Pattern 1, Exps 2-2 in BDF3299-IR (01) (1)	702.938605 Secs (2811.754 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[3]

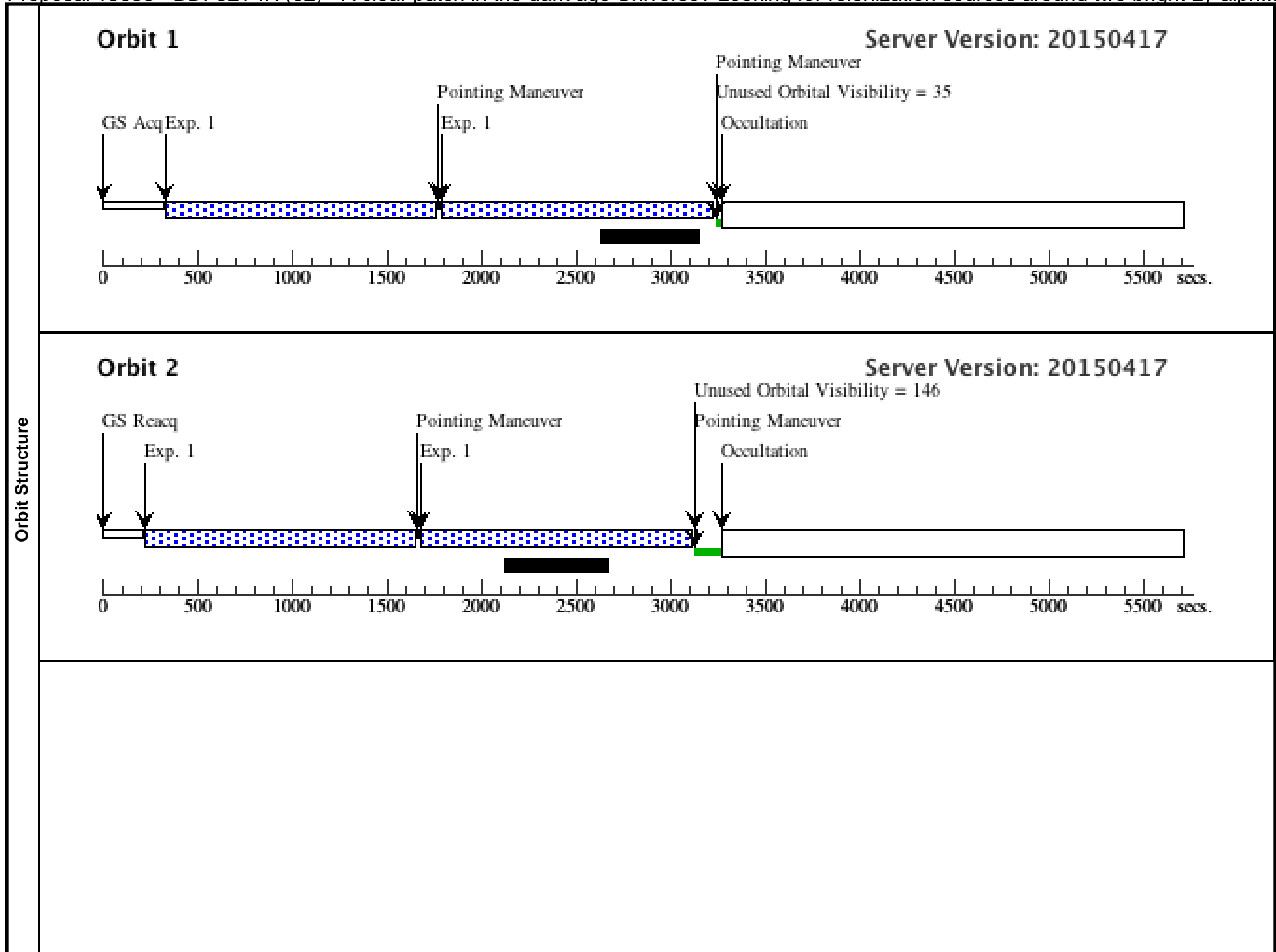


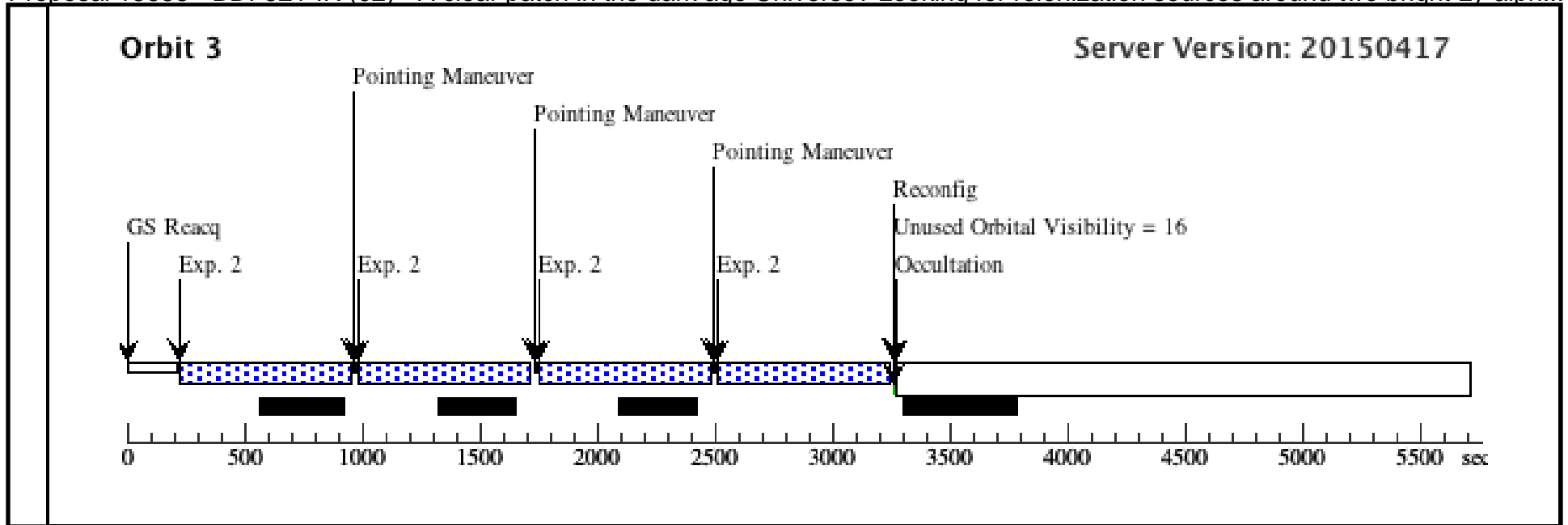


Proposal 13688 - BDF521-IR (02) - A clear patch in the dark age Universe? Looking for reionization sources around two bright Ly-alpha...

Wed Jun 17 12:21:18 GMT 2015

Visit	Proposal 13688, BDF521-IR (02), completed 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=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1), (2)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(2)	BDF-521	RA: 22 27 48.7086 (336.9529525d) Dec: -35 07 49.16 (-35.13032d) Equinox: J2000		V=25.0+/-5.0	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F105W-521-2orbits	(2) BDF-521	WFC3/IR, MULTIACCUM, IR-FIX	F105W	NSAMP=15; SAMP-SEQ=SPAR S100		Pattern 1, Exps 1-1 in BDF521-IR (02) (1)	1402.936813 Secs (5611.747 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]
										[2]
	2	F105W-521-1orbit	(2) BDF-521	WFC3/IR, MULTIACCUM, IR-FIX	F105W	NSAMP=15; SAMP-SEQ=SPAR S50		Pattern 1, Exps 2-2 in BDF521-IR (02) (1)	702.938605 Secs (2811.754 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[3]

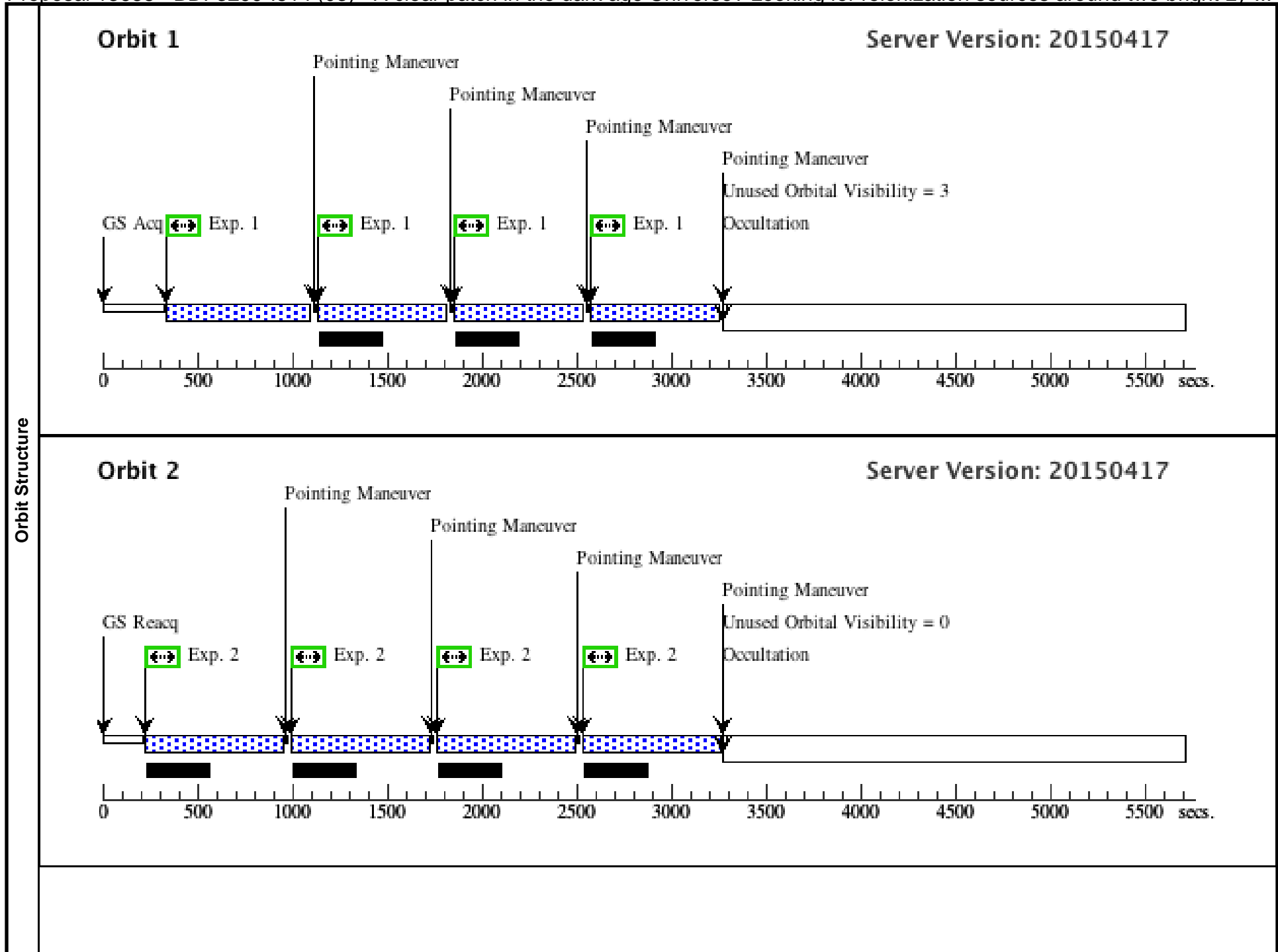


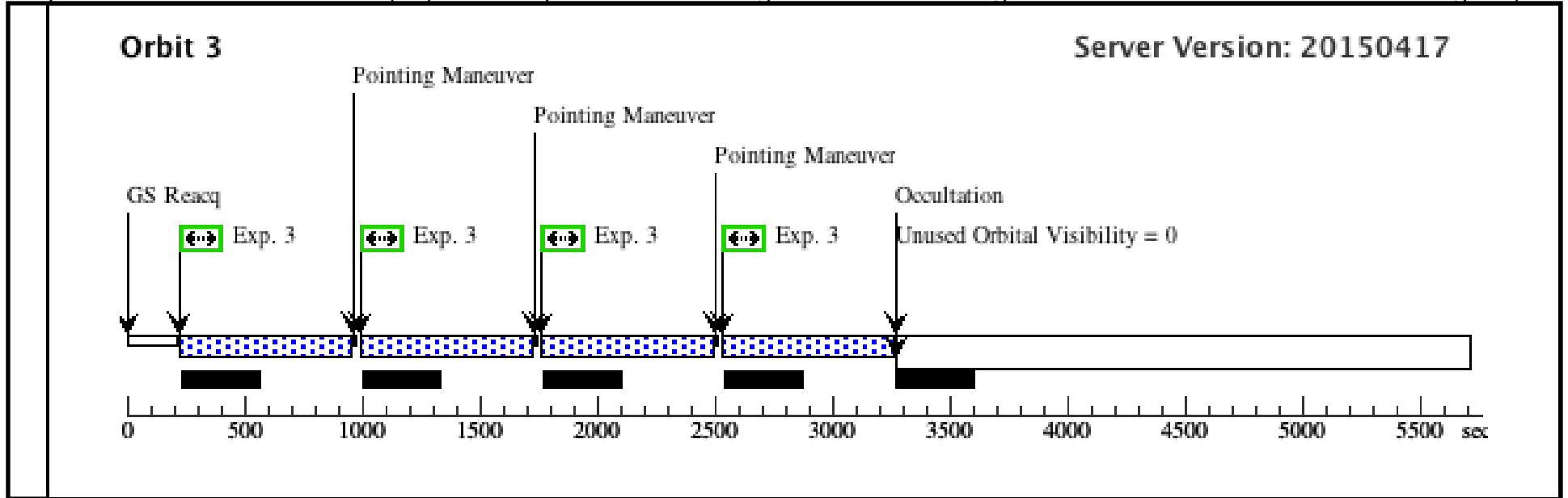


Proposal 13688 - BDF3299-I814 (03) - A clear patch in the dark age Universe? Looking for reionization sources around two bright Ly...

Wed Jun 17 12:21:18 GMT 2015

Visit	Proposal 13688, BDF3299-I814 (03), completed Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC Special Requirements: (none)									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
		(4)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=6.10486 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=91.16385 Angle Between Sides= Center Pattern=true	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=3.08553 Line Spacing=	(1), (2), (3)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	BDF-3299	RA: 22 28 8.9133 (337.0371388d) Dec: -35 09 29.40 (-35.15817d) Equinox: J2000		V=25.0+/-5.0	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F814W-BD F3299-1st-orbit	(1) BDF-3299	ACS/WFC, ACCUM, WFCENTER	F814W	CR-SPLIT=NO		Pattern 4, Exps 1-1 in BDF3299-I814 (03) (4)	507 Secs (2236 Secs) [==>559.0 Secs (Pattern 1,1)] [==>559.0 Secs (Pattern 1,2)] [==>559.0 Secs (Pattern 2,1)] [==>559.0 Secs (Pattern 2,2)]	[1]
	2	F814W-BD F3299-2nd-orbit	(1) BDF-3299	ACS/WFC, ACCUM, WFCENTER	F814W	CR-SPLIT=NO		Pattern 4, Exps 2-2 in BDF3299-I814 (03) (4)	507 Secs (2432 Secs) [==>608.0 Secs (Pattern 1,1)] [==>608.0 Secs (Pattern 1,2)] [==>608.0 Secs (Pattern 2,1)] [==>608.0 Secs (Pattern 2,2)]	[2]
	3	F814W-BD F3299-3rd-orbit	(1) BDF-3299	ACS/WFC, ACCUM, WFCENTER	F814W	CR-SPLIT=NO		Pattern 4, Exps 3-3 in BDF3299-I814 (03) (4)	507 Secs (2432 Secs) [==>608.0 Secs (Pattern 1,1)] [==>608.0 Secs (Pattern 1,2)] [==>608.0 Secs (Pattern 2,1)] [==>608.0 Secs (Pattern 2,2)]	[3]

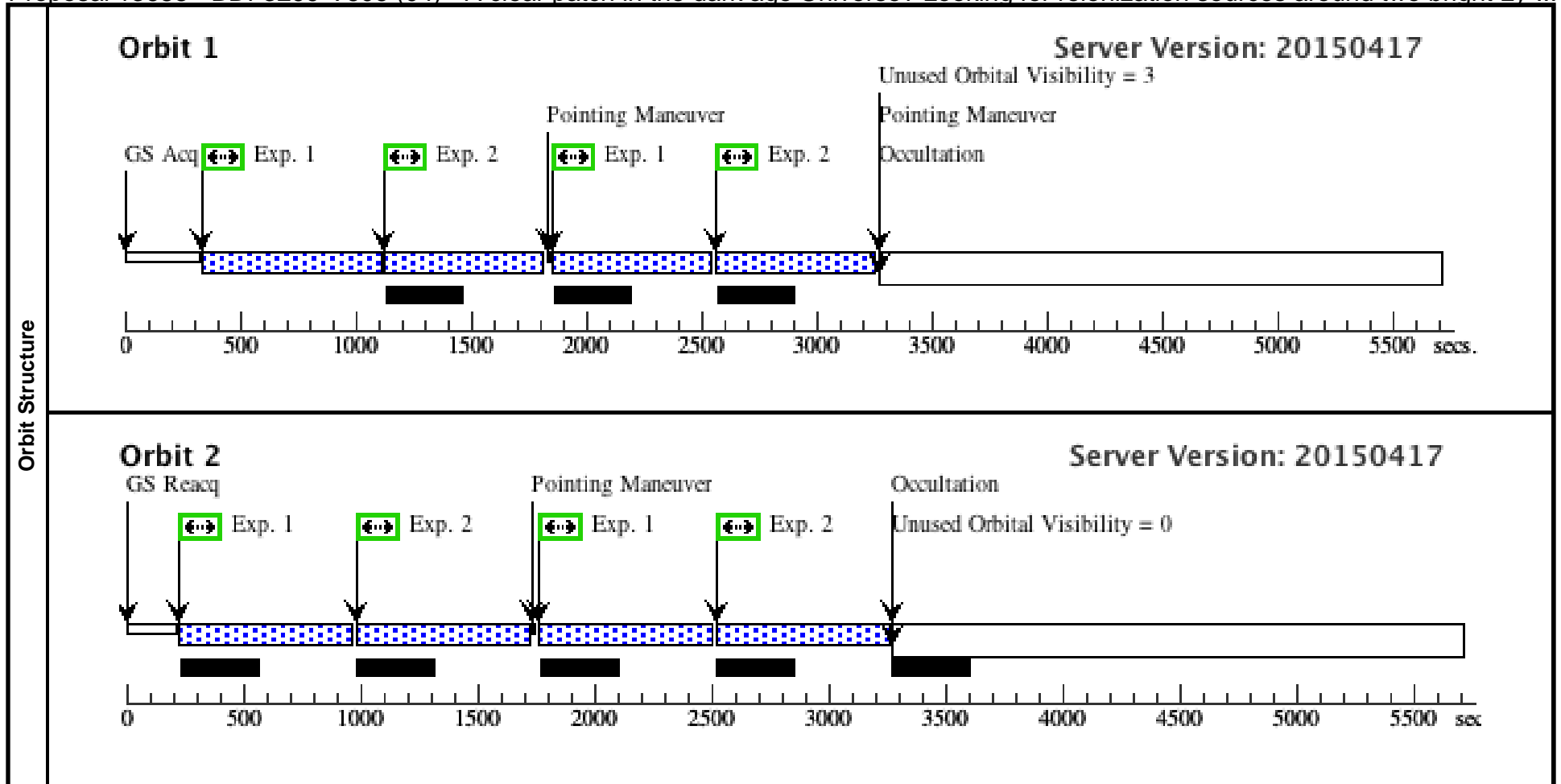




Proposal 13688 - BDF3299-V606 (04) - A clear patch in the dark age Universe? Looking for reionization sources around two bright Ly-...

Wed Jun 17 12:21:18 GMT 2015

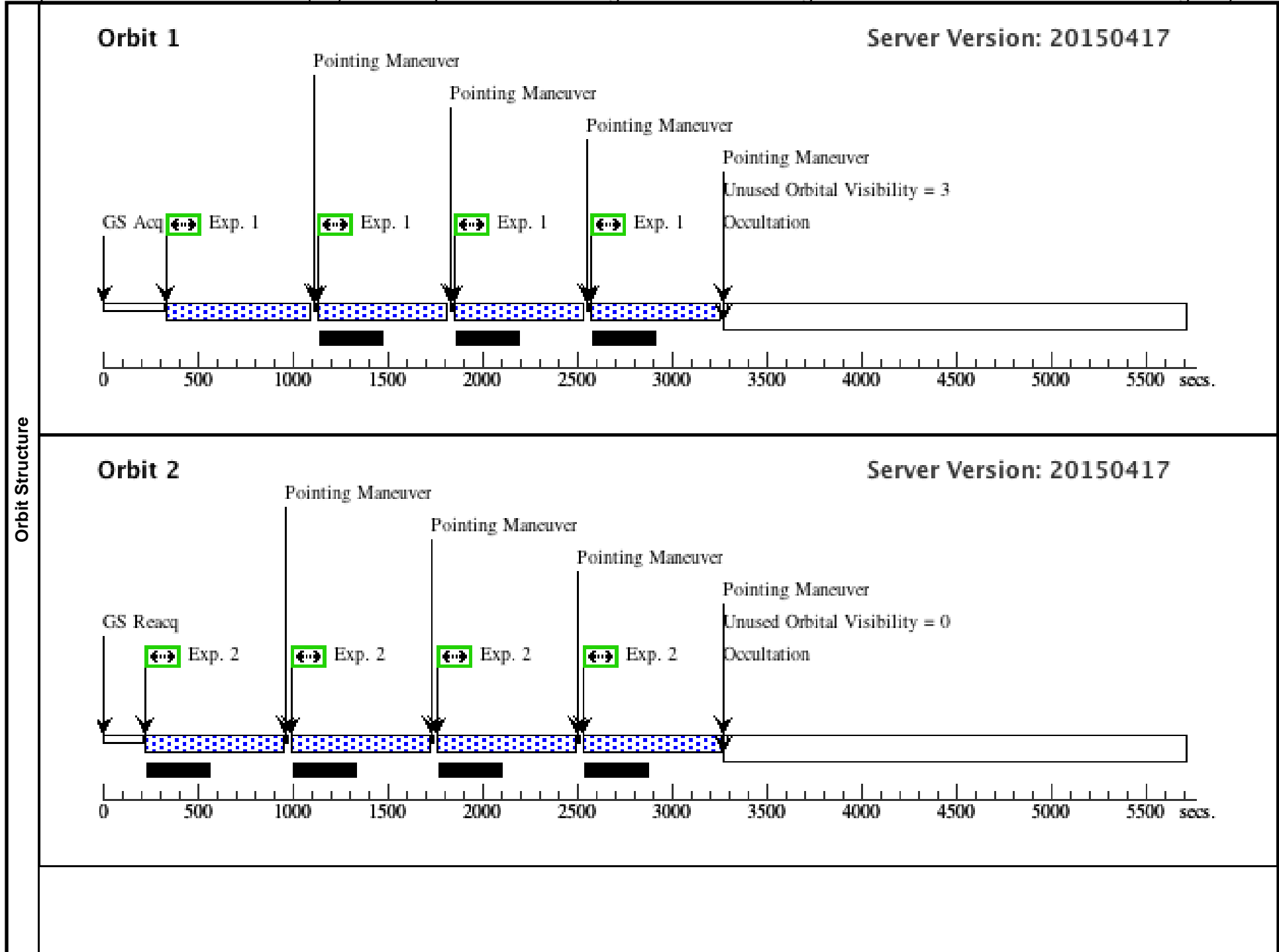
Visit	Proposal 13688, BDF3299-V606 (04), completed Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC Special Requirements: (none)									
	#	Primary Pattern	Secondary Pattern	Exposures						
	(4)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=6.10486 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=91.16385 Angle Between Sides= Center Pattern=true	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=3.08553 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.38987 Angle Between Sides= Center Pattern=false	(1-2)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	BDF-3299	RA: 22 28 8.9133 (337.0371388d) Dec: -35 09 29.40 (-35.15817d) Equinox: J2000		V=25.0+/-5.0	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F606W-BD F3299-1st-orbit	(1) BDF-3299	ACS/WFC, ACCUM, WFCENTER	F606W			Pattern 4, Exps 1-2 in BDF3299-V606 (04) (4)	520 Secs (2382 Secs)	
									[==>571.0 Secs (Pattern 1,1)]	[1]
									[==>571.0 Secs (Pattern 1,2)]	
									[==>620.0 Secs (Pattern 2,1)]	[2]
									[==>620.0 Secs (Pattern 2,2)]	
2	F606W-BD F3299-2nd-orbit	(1) BDF-3299	ACS/WFC, ACCUM, WFCENTER	F606W			Pattern 4, Exps 1-2 in BDF3299-V606 (04) (4)	520 Secs (2382 Secs)		
								[==>571.0 Secs (Pattern 1,1)]	[1]	
								[==>571.0 Secs (Pattern 1,2)]		
								[==>620.0 Secs (Pattern 2,1)]	[2]	
								[==>620.0 Secs (Pattern 2,2)]		

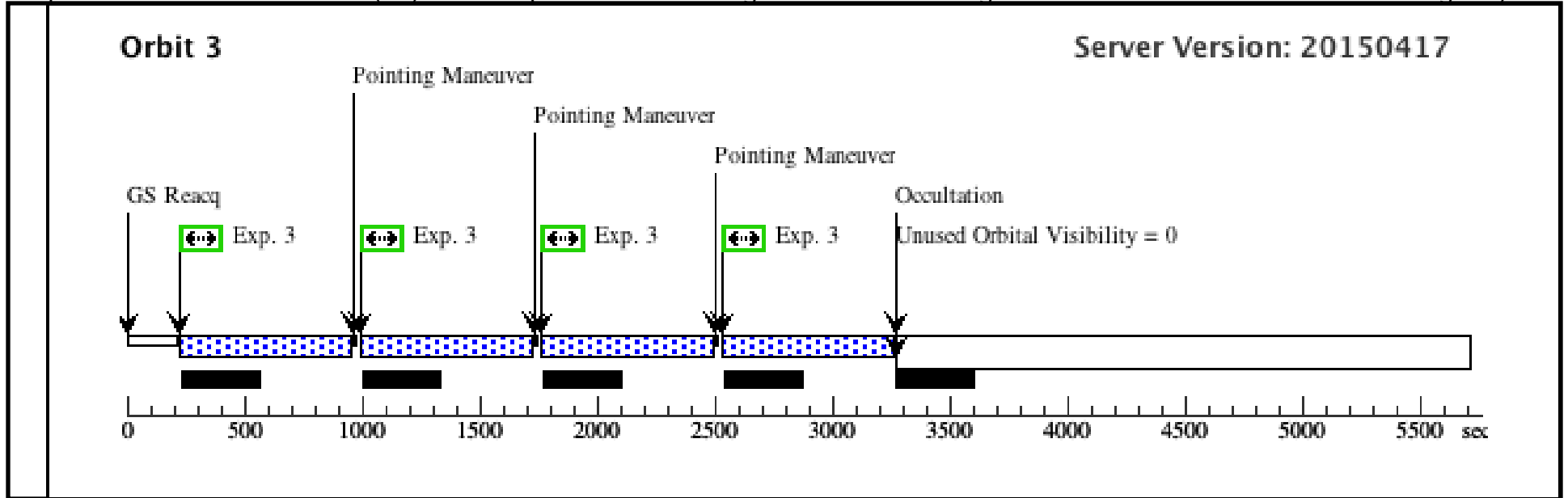


Proposal 13688 - BDF521-I814 (05) - A clear patch in the dark age Universe? Looking for reionization sources around two bright Ly- α ...

Wed Jun 17 12:21:18 GMT 2015

Visit	Proposal 13688, BDF521-I814 (05), completed Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC Special Requirements: (none)									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
		(4)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=6.10486 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=91.16385 Angle Between Sides= Center Pattern=true	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=3.08553 Line Spacing=	(1), (2), (3)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(2)	BDF-521	RA: 22 27 48.7086 (336.9529525d) Dec: -35 07 49.16 (-35.13032d) Equinox: J2000		V=25.0+/-5.0	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F814W-BD F521-1st-or bit	(2) BDF-521	ACS/WFC, ACCUM, WFCENTER	F814W	CR-SPLIT=NO		Pattern 4, Exps 1-1 i n BDF521-I814 (05) (4)	507 Secs (2236 Secs) [=>559.0 Secs (Pattern 1,1)] [=>559.0 Secs (Pattern 1,2)] [=>559.0 Secs (Pattern 2,1)] [=>559.0 Secs (Pattern 2,2)]	[1]
	2	F814W-BD F521-2nd-or bit	(2) BDF-521	ACS/WFC, ACCUM, WFCENTER	F814W	CR-SPLIT=NO		Pattern 4, Exps 2-2 i n BDF521-I814 (05) (4)	507 Secs (2432 Secs) [=>608.0 Secs (Pattern 1,1)] [=>608.0 Secs (Pattern 1,2)] [=>608.0 Secs (Pattern 2,1)] [=>608.0 Secs (Pattern 2,2)]	[2]
	3	F814W-BD F521-3rd-or bit	(2) BDF-521	ACS/WFC, ACCUM, WFCENTER	F814W	CR-SPLIT=NO		Pattern 4, Exps 3-3 i n BDF521-I814 (05) (4)	507 Secs (2432 Secs) [=>608.0 Secs (Pattern 1,1)] [=>608.0 Secs (Pattern 1,2)] [=>608.0 Secs (Pattern 2,1)] [=>608.0 Secs (Pattern 2,2)]	[3]

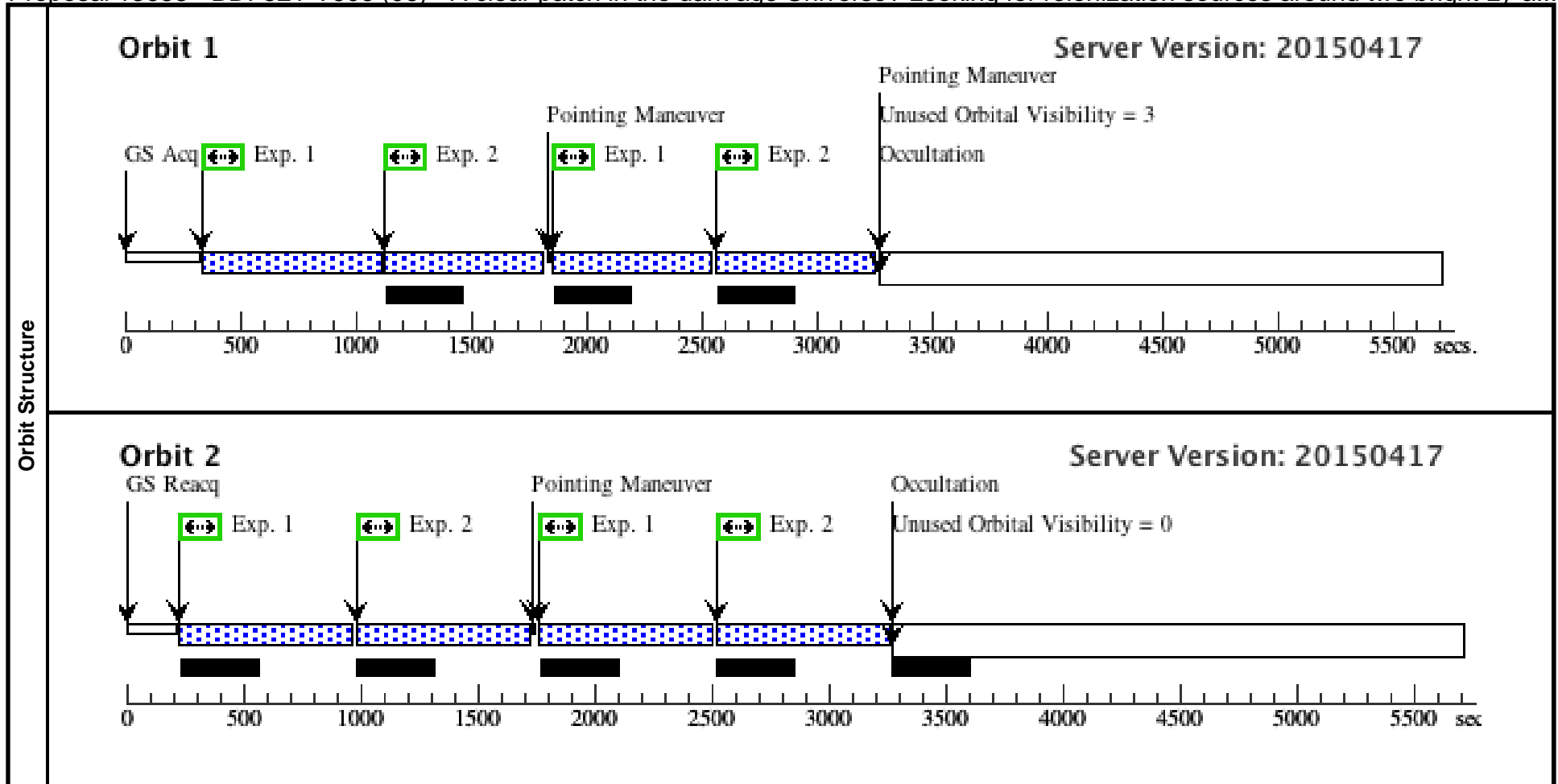




Proposal 13688 - BDF521-V606 (06) - A clear patch in the dark age Universe? Looking for reionization sources around two bright Ly-a...

Wed Jun 17 12:21:19 GMT 2015

Visit	Proposal 13688, BDF521-V606 (06), failed Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC Special Requirements: (none)										
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures						
		(4)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=6.10486 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=91.16385 Angle Between Sides= Center Pattern=true	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=3.08553 Line Spacing=	(1-2)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous					
	(2)	BDF-521	RA: 22 27 48.7086 (336.9529525d) Dec: -35 07 49.16 (-35.13032d) Equinox: J2000		V=25.0+/-5.0	Reference Frame: ICRS					
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
	1	F606W-BD F521-1st-or bit	(2) BDF-521	ACS/WFC, ACCUM, WFCENTER	F606W				Pattern 4, Exps 1-2 in BDF521-V606 (06)) (4)	520 Secs (2382 Secs) [==>571.0 Secs (Pattern 1,1)] [==>571.0 Secs (Pattern 1,2)]	[1]
									[==>620.0 Secs (Pattern 2,1)] [==>620.0 Secs (Pattern 2,2)]	[2]	
	2	F606W-BD F521-2nd-or bit	(2) BDF-521	ACS/WFC, ACCUM, WFCENTER	F606W				Pattern 4, Exps 1-2 in BDF521-V606 (06)) (4)	520 Secs (2382 Secs) [==>571.0 Secs (Pattern 1,1)] [==>571.0 Secs (Pattern 1,2)]	[1]
									[==>620.0 Secs (Pattern 2,1)] [==>620.0 Secs (Pattern 2,2)]	[2]	



Proposal 13688 - BDF521-V606 (56) - A clear patch in the dark age Universe? Looking for reionization sources around two bright Ly-a...

Wed Jun 17 12:21:19 GMT 2015

Visit	Proposal 13688, BDF521-V606 (56) Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC Special Requirements: (none)										
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures						
		(4)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=6.10486 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=91.16385 Angle Between Sides= Center Pattern=true	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=3.08553 Line Spacing=	(1-2)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous					
	(2)	BDF-521	RA: 22 27 48.7086 (336.9529525d) Dec: -35 07 49.16 (-35.13032d) Equinox: J2000		V=25.0+/-5.0	Reference Frame: ICRS					
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
	1	F606W-BD F521-1st-or bit	(2) BDF-521	ACS/WFC, ACCUM, WFCENTER	F606W				Pattern 4, Exps 1-2 in BDF521-V606 (56) (4)	520 Secs (2382 Secs) [==>571.0 Secs (Pattern 1,1)] [==>571.0 Secs (Pattern 1,2)]	[1]
									[==>620.0 Secs (Pattern 2,1)] [==>620.0 Secs (Pattern 2,2)]	[2]	
	2	F606W-BD F521-2nd-or bit	(2) BDF-521	ACS/WFC, ACCUM, WFCENTER	F606W				Pattern 4, Exps 1-2 in BDF521-V606 (56) (4)	520 Secs (2382 Secs) [==>571.0 Secs (Pattern 1,1)] [==>571.0 Secs (Pattern 1,2)]	[1]
									[==>620.0 Secs (Pattern 2,1)] [==>620.0 Secs (Pattern 2,2)]	[2]	

