



12860 - Detecting Sources of Early IGM Enrichment

Cycle: 20, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

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VISITS

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
01	(1) SDSSJ1030+0524	ACS/WFC	3	09-Jul-2012 21:12:01.0	yes
02	(1) SDSSJ1030+0524	ACS/WFC	5	09-Jul-2012 21:12:12.0	yes
03	(1) SDSSJ1030+0524	ACS/WFC	4	09-Jul-2012 21:12:23.0	yes
04	(2) SDSSJ1306+0356	ACS/WFC	3	09-Jul-2012 21:12:31.0	yes

15 Total Orbits Used

ABSTRACT

Intergalactic medium (IGM) metal absorption lines observed in $z > 5$ quasar spectra offer the opportunity to probe early galaxy feedback process and the nature of enriching sources in the reionization and post-reionization era. The question of whether galaxies drove cosmological reionization depends crucially on the strength of the feedback processes that regulated their growth. Theoretical models predict that outflows dominate galaxy growth and through it the ionizing luminosity function; at the same time, these superwind outflows would enrich their surrounding IGM, resulting in

Proposal 12860 (STScI Edit Number: 1, Created: Monday, July 9, 2012 8:12:38 PM EST) - Overview

a strong IGM-galaxy correlation. We propose to test this idea directly by identifying and studying the host galaxies of four known IGM CIV absorbers along two quasar lines of sight at $z=5-6$. We will center the ACS ramp filters on the Ly alpha wavelengths corresponding to the CIV absorbers' as-yet-undiscovered host galaxies. With deep imaging, we will then detect Ly alpha emission from galaxies with star formation rates as low as $\sim 1 M_{\text{sun}}/\text{yr}$ that lie within impact parameters of ~ 150 kpc (physical) from the quasars. We will use existing deep broad-band imaging to eliminate contaminants and constrain the properties of the absorbers' host galaxies. By combining our results with the single existing CIV galaxy detection at $z>5$, we will construct the first sample allowing direct statistical constraints on the nature of feedback near the end of the reionization epoch and providing tests to models of IGM enrichment and ionization.

OBSERVING DESCRIPTION

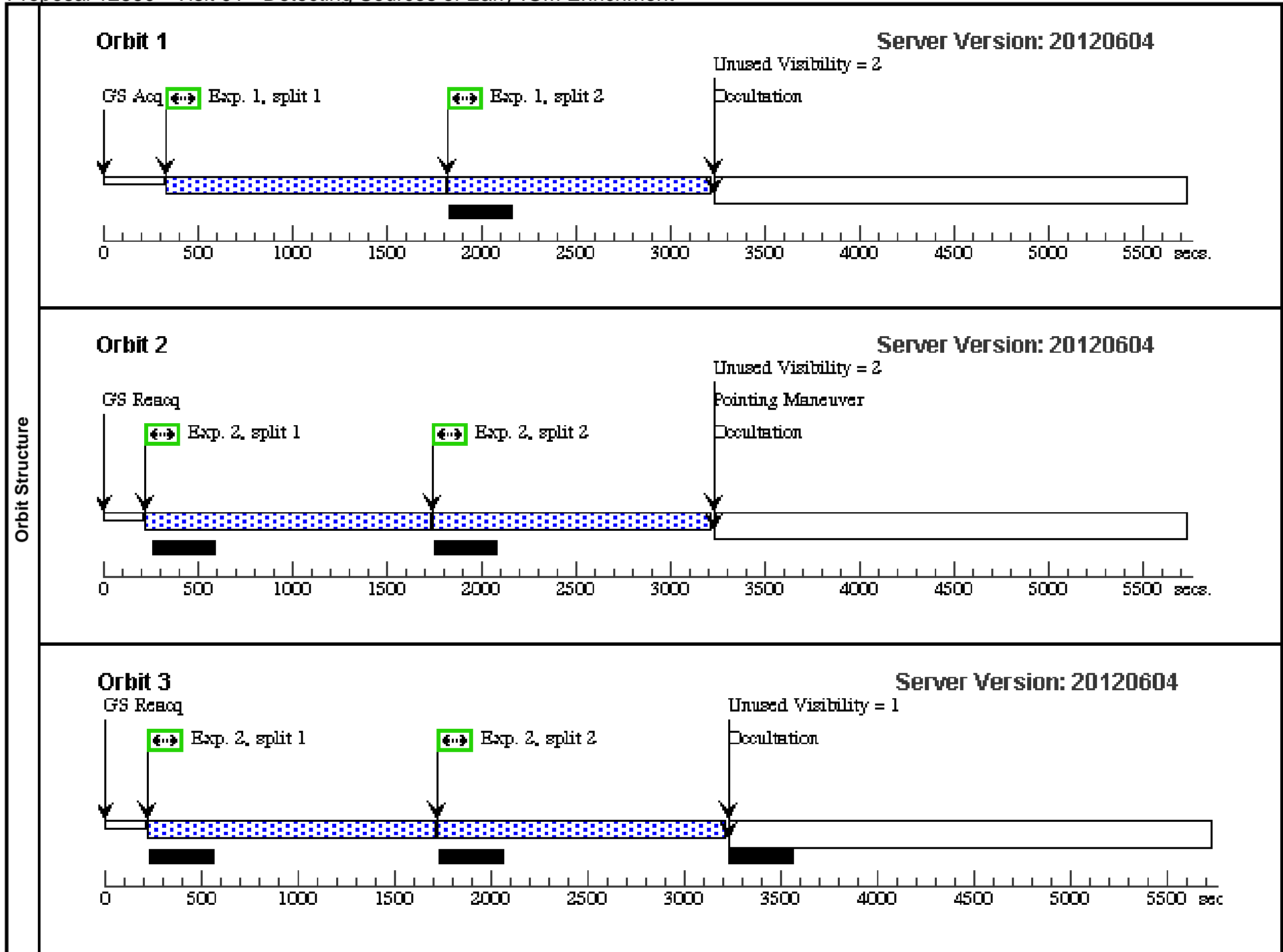
We will observe SDSS J1030+0524 and J1306+0356 for 15 orbits with ACS using the narrow-band (2% bandpass) ramp filter.

We will divide the program into four visits. In the first visit, we will observe: (1). One orbit FR853 for J1030+0524, with the exposure time is ~ 2540 sec. (2). Two orbits of FR716N, with exposure time ~ 2695 sec for each orbit. We use 2-point ACS-dither-line pattern to populate the two orbits. In the second visit, we will first do a POS TARG offset regarding to the first visit, and then we observe: (1). One orbit in FR716 for J1030+0524, (2). Four orbits in FR853 for J1030+0524. We will carry out a ACS-WFC-DITHER-BOX dither with orbit long (~ 2695 sec) exposures to populate the four orbits in FR853. In the third visit, we will do four orbits in FR782 for J1030+0524. We will carry out a ACS-WFC-DITHER-BOX dither with orbit long (~ 2540 sec) individual exposures. In the fourth visit, we will observe three orbits FR716 for J1306+0356, and we will do one ~ 2540 sec exposure to populate the first orbit, and the ACS-WFC-DITHER-LINE with ~ 2695 sec exposures to populate the rest two orbits of FR716 observations. All the orbit-long exposures are split into two subexposures because of cosmic ray rejection (CR-SPLIT=2).

Proposal 12860 - Visit 01 - Detecting Sources of Early IGM Enrichment

Tue Jul 10 01:12:38 GMT 2012

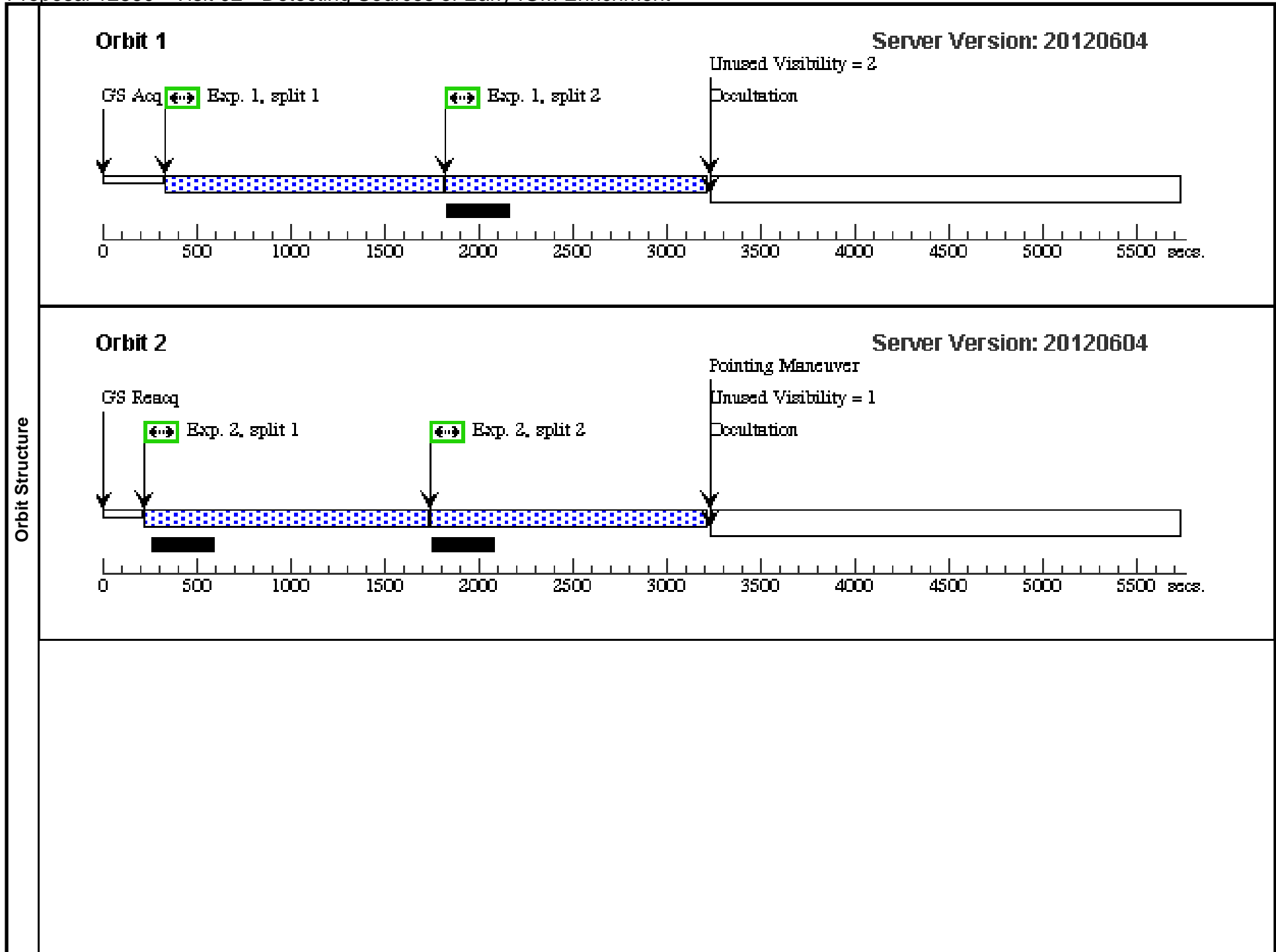
Visit	Proposal 12860, Visit 01, implementation Diagnostic Status: Warning Scientific Instruments: ACS/WFC Special Requirements: (none)									
	(Exposure 2 (Pattern 2, Exps 2-2 in Visit 01)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.									
Diagnosics										
Patterns	#	Primary Pattern			Secondary Pattern			Exposures		
	(2)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.364 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides= Center Pattern=false						(2)		
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	SDSSJ1030+0524	RA: 10 30 27.1000 (157.6129167d) Dec: +05 24 55.00 (5.41528d) Equinox: J2000		V=(?) z_AB = 19.6	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(1) SDSSJ1030+0524 4	ACS/WFC, ACCUM, WFC1-IRAMP	FR853N 8198.6 A	CR-SPLIT=2				2540 Secs	
									[==>(Split 1)]	[1]
									[==>(Split 2)]	
	2	(1) SDSSJ1030+0524 4	ACS/WFC, ACCUM, WFC1-IRAMP	FR716N 7230.9 A	CR-SPLIT=2			Pattern 2, Exps 2-2 in Visit 01 (2)	2695 Secs	
								[==>(Pattern 1, Split 1)]	[2]	
								[==>(Pattern 1, Split 2)]		
								[==>1366.5 Secs (Pattern 2, Split 1)]	[3]	
								[==>1366.5 Secs (Pattern 2, Split 2)]		



Proposal 12860 - Visit 02 - Detecting Sources of Early IGM Enrichment

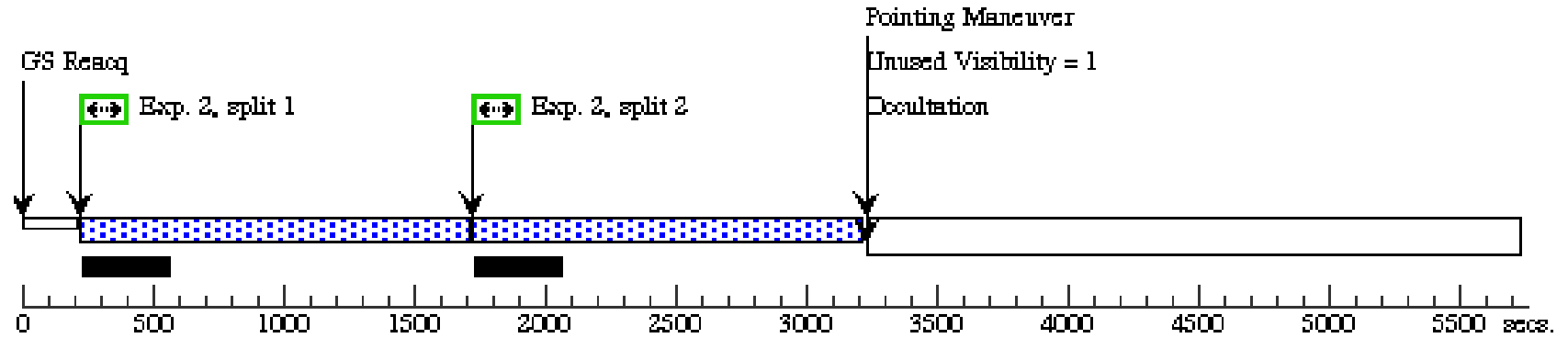
Tue Jul 10 01:12:42 GMT 2012

Visit	Proposal 12860, Visit 02, implementation Diagnostic Status: Warning Scientific Instruments: ACS/WFC Special Requirements: (none)										
	(Exposure 1 (Visit 02)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures. (Exposure 2 (Pattern 1, Exps 2-2 in Visit 02)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.										
Diagnosics											
Patterns	#	Primary Pattern				Secondary Pattern				Exposures	
	(1)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.265 Line Spacing=0.187				Coordinate Frame=POS-TARG Pattern Orientation=20.67 Angle Between Sides=69.05 Center Pattern=false				(2)	
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous		
	(1)	SDSSJ1030+0524	RA: 10 30 27.1000 (157.6129167d) Dec: +05 24 55.00 (5.41528d) Equinox: J2000				V=(?) z_AB = 19.6		Reference Frame: ICRS		
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1	(1) SDSSJ1030+0524 4	(1) SDSSJ1030+0524	ACS/WFC, ACCUM, WFC1-IRAMP	FR716N 7230.9 A	CR-SPLIT=2	POS TARG -0.30,0. 30		2540 Secs		
									[==>(Split 1)]		[1]
									[==>(Split 2)]		
	2	(1) SDSSJ1030+0524 4	(1) SDSSJ1030+0524	ACS/WFC, ACCUM, WFC1-IRAMP	FR853N 8198.6 A	CR-SPLIT=2	POS TARG -0.30,0. 30	Pattern 1, Exps 2-2 in Visit 02 (1)	2698 Secs		
									[==>(Pattern 1, Split 1)]		[2]
									[==>(Pattern 1, Split 2)]		
									[==>1367.0 Secs (Pattern 2, Split 1)]		[3]
									[==>1367.0 Secs (Pattern 2, Split 2)]		
									[==>1367.0 Secs (Pattern 3, Split 1)]		[4]
								[==>1367.0 Secs (Pattern 3, Split 2)]			
								[==>1367.0 Secs (Pattern 4, Split 1)]		[5]	
								[==>1367.0 Secs (Pattern 4, Split 2)]			



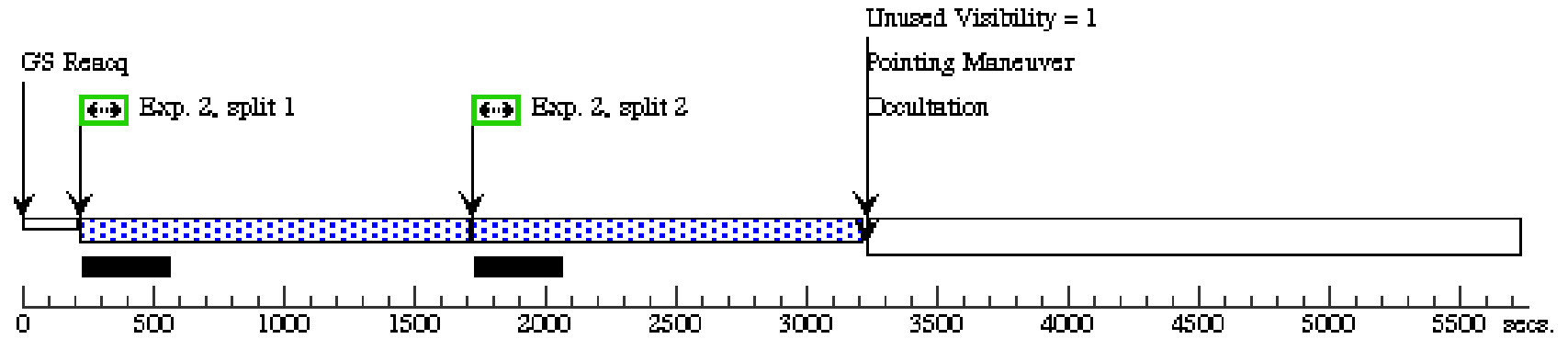
Orbit 3

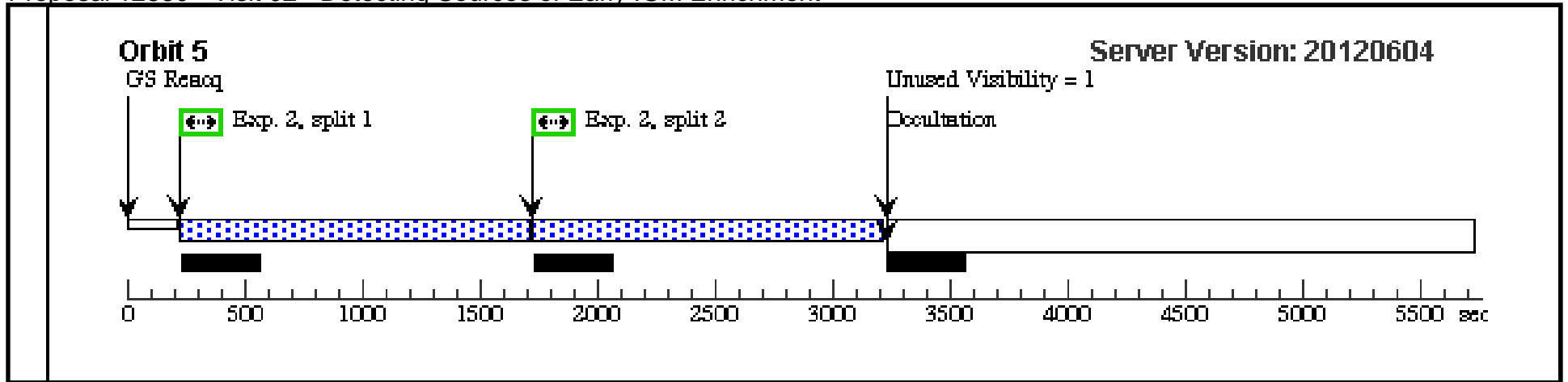
Server Version: 20120604



Orbit 4

Server Version: 20120604

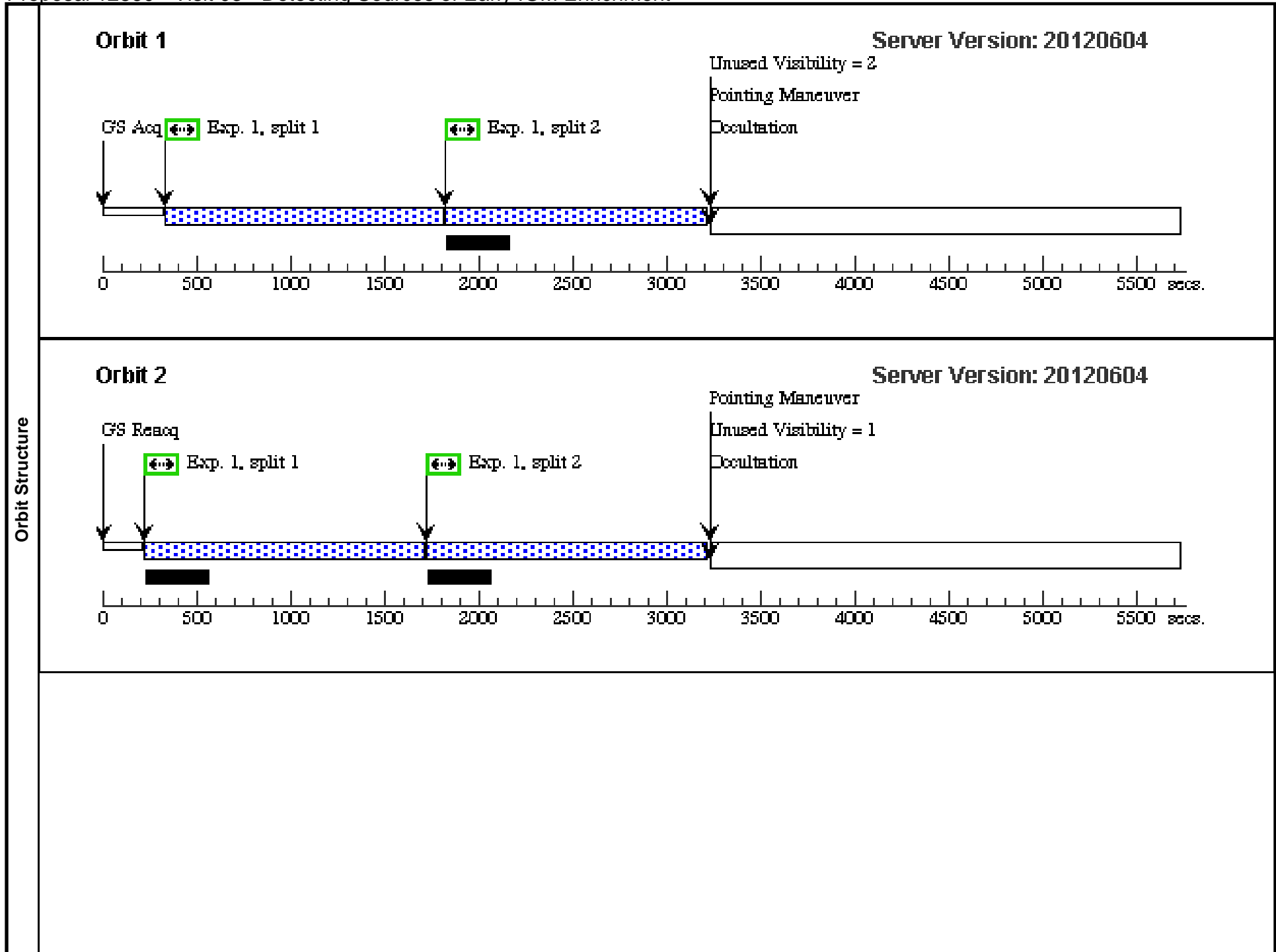




Proposal 12860 - Visit 03 - Detecting Sources of Early IGM Enrichment

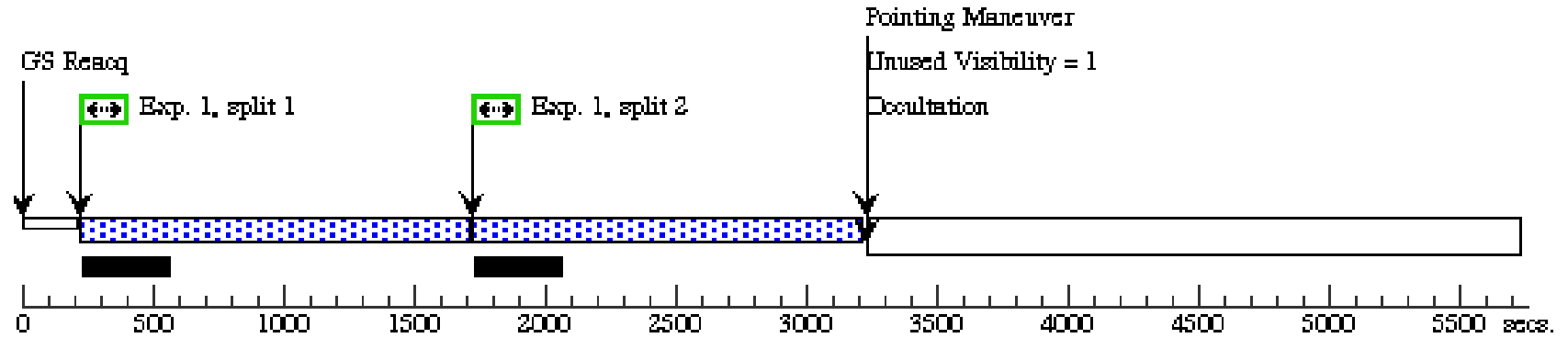
Tue Jul 10 01:12:48 GMT 2012

Visit	Proposal 12860, Visit 03, implementation Diagnostic Status: Warning Scientific Instruments: ACS/WFC Special Requirements: (none)									
	(Exposure 1 (Pattern 1, Exps 1-1 in Visit 03)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.									
Diagnosics										
Patterns	#	Primary Pattern				Secondary Pattern				Exposures
	(1)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.265 Line Spacing=0.187				Coordinate Frame=POS-TARG Pattern Orientation=20.67 Angle Between Sides=69.05 Center Pattern=false				(1)
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous	
	(1)	SDSSJ1030+0524	RA: 10 30 27.1000 (157.6129167d) Dec: +05 24 55.00 (5.41528d) Equinox: J2000				V=(?) z_AB = 19.6		Reference Frame: ICRS	
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(1) SDSSJ1030+0524	ACS/WFC, ACCUM, WFC2-ORAMP	FR782N 7922.6 A	CR-SPLIT=2		Pattern 1, Exps 1-1 in Visit 03 (1)	2540 Secs	
			4						[==>(Pattern 1, Split 1)]	[1]
									[==>(Pattern 1, Split 2)]	
									[==>1367.0 Secs (Pattern 2, Split 1)]	[2]
									[==>1367.0 Secs (Pattern 2, Split 2)]	
								[==>1367.0 Secs (Pattern 3, Split 1)]	[3]	
								[==>1367.0 Secs (Pattern 3, Split 2)]		
								[==>1367.0 Secs (Pattern 4, Split 1)]	[4]	
								[==>1367.0 Secs (Pattern 4, Split 2)]		



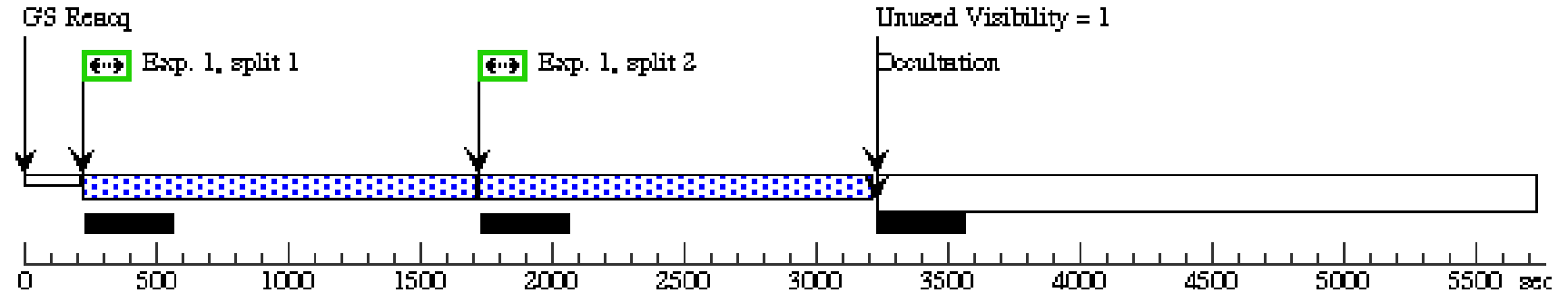
Orbit 3

Server Version: 20120604



Orbit 4

Server Version: 20120604



Proposal 12860 - Visit 04 - Detecting Sources of Early IGM Enrichment

Tue Jul 10 01:12:51 GMT 2012

Visit	Proposal 12860, Visit 04, implementation Diagnostic Status: Warning Scientific Instruments: ACS/WFC Special Requirements: SCHED 100%									
	(Exposure 2 (Pattern 2, Exps 2-2 in Visit 04)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.									
Diagnosics										
Patterns	#	Primary Pattern				Secondary Pattern				Exposures
	(2)	Pattern Type=ACS-WFC-DITHER- LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.364 Line Spacing=				Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides= Center Pattern=false				(2)
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous	
	(2)	SDSSJ1306+0356	RA: 13 06 8.2600 (196.5344167d) Dec: +03 56 26.30 (3.94064d) Equinox: J2000				V=(?) z_AB = 19.3		Reference Frame: ICRS	
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(2) SDSSJ1306+0356 6	ACS/WFC, ACCUM, WFC1-IRAMP	FR716N 7131.2 A	CR-SPLIT=2			2540 Secs [==>1162.0 Secs (Split 1)] [==>1162.0 Secs (Split 2)]	[1]
	2		(2) SDSSJ1306+0356 6	ACS/WFC, ACCUM, WFC1-IRAMP	FR716N 7131.2 A	CR-SPLIT=2	POS TARG 0.247,0. 267	Pattern 2, Exps 2-2 i n Visit 04 (2)	2695 Secs [==>1257.5 Secs (Pattern 1, Split 1)] [==>1257.5 Secs (Pattern 1, Split 2)]	[2]
									[==>1257.5 Secs (Pattern 2, Split 1)] [==>1257.5 Secs (Pattern 2, Split 2)]	[3]

