12378 - The differing environments of dark gamma-ray bursts

Cycle: 18, Proposal Category: GO

(Availability Mode: SUPPORTED)

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?*
D1	(7) GRB110312A	WFC3/IR WFC3/UVIS	1	30-Sep-2011 21:15:37.0	yes
D2	(6) GRB-110328A	WFC3/IR WFC3/UVIS	2	30-Sep-2011 21:15:44.0	yes
D3	(6) GRB-110328A	WFC3/IR WFC3/UVIS	1	30-Sep-2011 21:15:50.0	yes
W1	(8) GRB110709B	WFC3/IR	1	30-Sep-2011 21:15:55.0	yes
W2	(8) GRB110709B	WFC3/UVIS	1	30-Sep-2011 21:15:58.0	yes

6 Total Orbits Used

ABSTRACT

Dark gamma-ray bursts (GRBs) -- where the optical emission is apparently suppressed -- can only be reliably localized by their X-ray afterglows. Here we propose to complete a survey using the sensitivity and point spread function of Chandra to precisely pinpoint the GRB locations, and HST to locate and study the host galaxies. Our results to date are suggestive of dark GRBs originating in more luminous and (so far exclusively) merging galaxies. Our increased sample will allow us to make strong statistical statements as to these differences and so elucidate both the nature of dark GRBs, and the relationships between GRBs and both obscured and unobscured star formation.

OBSERVING DESCRIPTION

The aim of this programme is to obtain HST optical and IR observations of the host galaxies of dark GRBs in order to characterize their morphologies and magnitudes in the optical and IR. We will utilize one of two strategies, depending on the outcome of our optical afterglow searches. i) if the searches are unsucessful at finding an afterglow (i.e. show the burst is dark), but do suggest a host galaxy we will obtain WFC3 F606W and F160W observations in a single orbit observation ii) If deep optical observations do not show a candidate host we will observe a single orbit in ACS/F606W and WFC3/F160W to achieve extra depth.

For our single orbit two colour observations we will utilize a 3 point dither to provide the best compromise between dithering/cosmic ray rejection and depth. Our full orbit per colour observations will use a standard 4 point dither.

Visit

Proposal 12378, Visit D1, scheduling Sat Oct 01 01:16:02 GMT 2011

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR, WFC3/UVIS

Special Requirements: (none)

Patterns

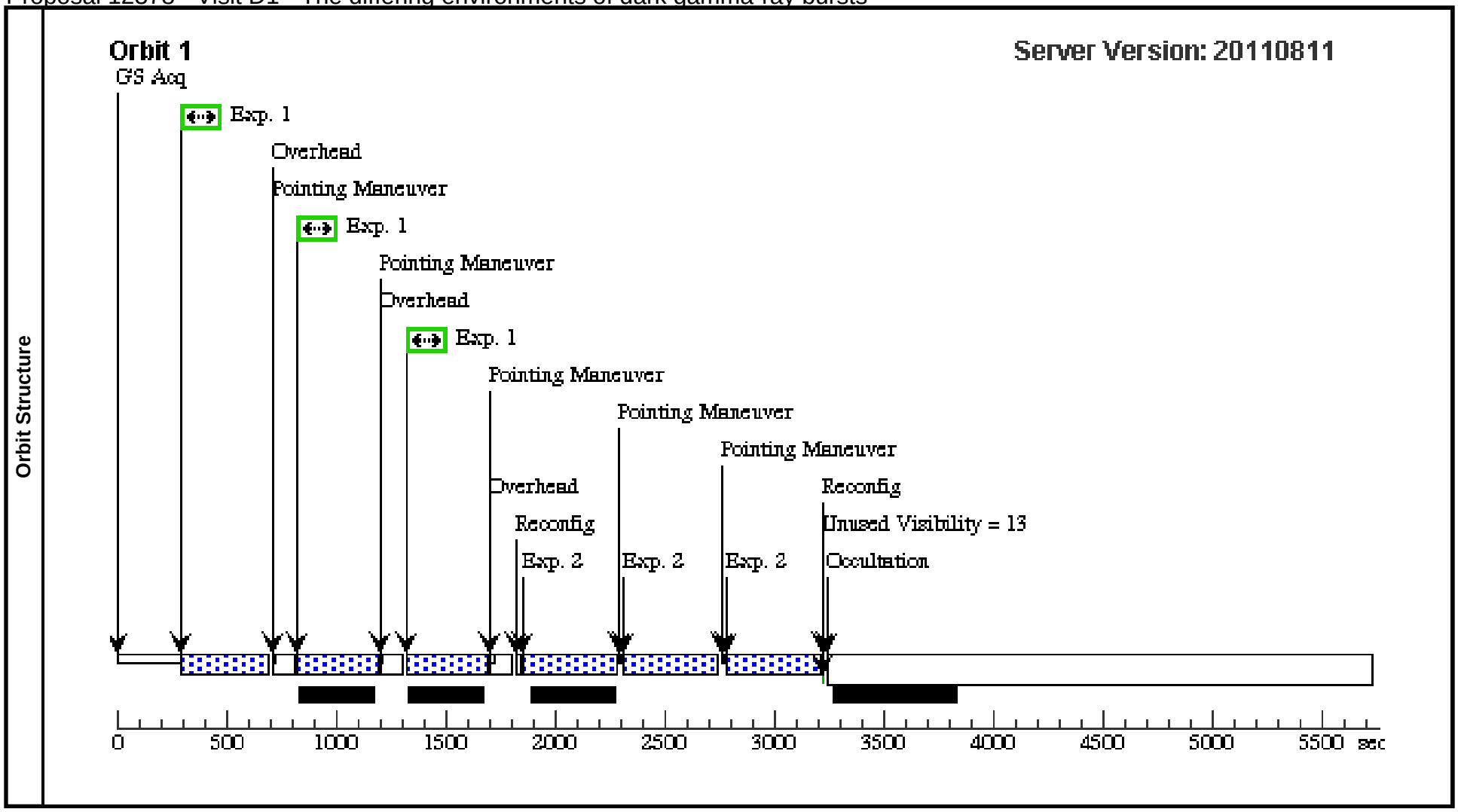
#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.145 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(1)
(5)	Pattern Type=WFC3-IR-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.636 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false		(2)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(7)	GRB110312A	RA: 10 29 55.4700 (157.4811250d) Dec: -05 15 45.20 (-5.26256d) Equinox: J2000		V=25+/-2	Reference Frame: Swift

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(7) GRB110312A	WFC3/UVIS, ACCUM, UVIS	F606W	CR-SPLIT=NO		Pattern 2, Exps 1-1 in Visit D1 (2)	370 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***
2		(7) GRB110312A	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=9; SAMP-SEQ=SPARS50		Pattern 5, Exps 2-2 in Visit D1 (5)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20110811
GS Acq
Exp. 1
Overhead
Pointing Maneuver
Exp. 1
Pointing Maneuver
Overhead
Exp. 1
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Overhead
Reconfig
Unused Visibility = 13
Exp. 2
Exp. 2
Exp. 2
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 12378, Visit D2, completed Sat Oct 01 01:16:03 GMT 2011

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR, WFC3/UVIS

Special Requirements: ORIENT 117D TO 125 D; BEFORE 31-AUG-2011:23:59:59

Patterns

#	Primary Pattern		Secondary Pattern		Exposures
(4)	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)
(6)	Pattern Type=WFC3-UVIS-MOS-DITH-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=true	Pattern Type=WFC3-UVIS-MOS-DITH-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.0992 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=3.93 Angle Between Sides= Center Pattern=false	(2)

Fixed Targets

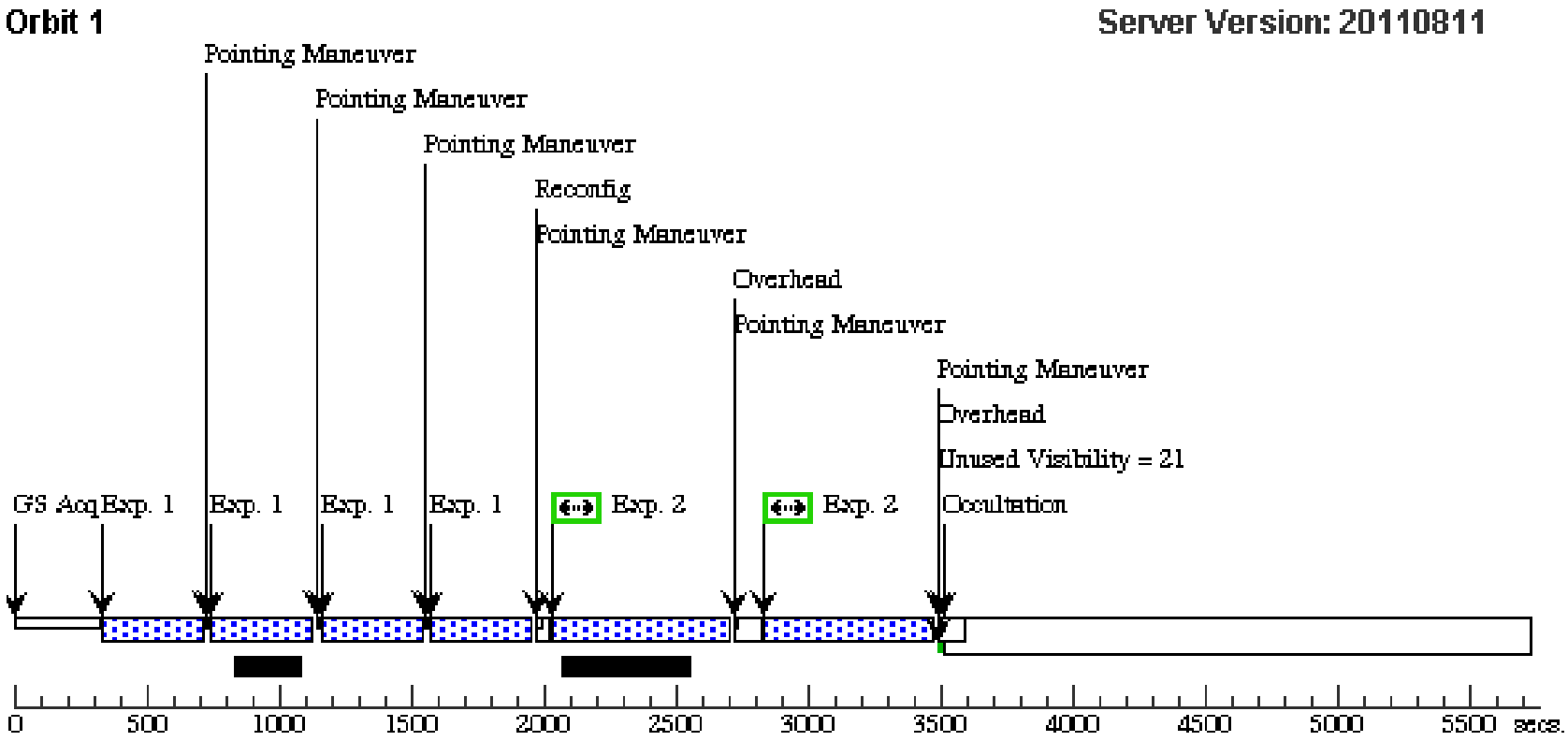
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(6)	GRB-110328A	RA: 16 44 49.9300 (251.2080417d) Dec: +57 34 59.70 (57.58325d) Equinox: J2000		V=23	Reference Frame: ICRS

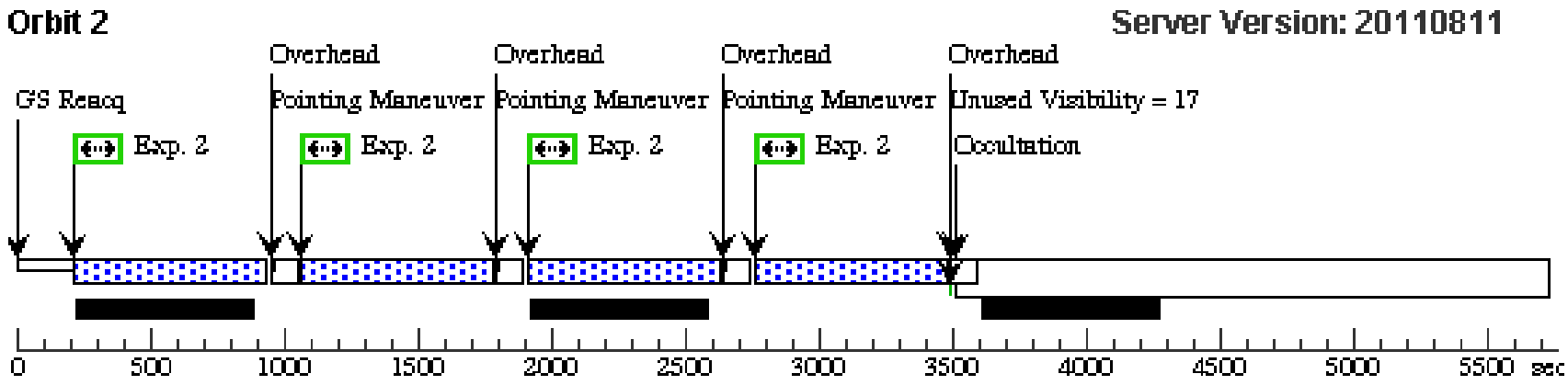
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(6) GRB-110328A	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=8; SAMP-SEQ=SPARS50		Pattern 4, Exps 1-1 in Visit D2 (4)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
2		(6) GRB-110328A	WFC3/UVIS, ACCUM, UVIS	F606W	CR-SPLIT=NO		Pattern 6, Exps 2-2 in Visit D2 (6)	370 Secs *[==>640 Secs (Pattern 1,1)]* *[==>640 Secs (Pattern 1,2)]*	***[1]***
								[==>720 Secs (Pattern 2,1)] *[==>720 Secs (Pattern 2,2)]* *[==>720 Secs (Pattern 3,1)]* *[==>720 Secs (Pattern 3,2)]*	***[2]***

Orbit Structure





Visit

Proposal 12378, Visit D3, implementation Sat Oct 01 01:16:04 GMT 2011

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR, WFC3/UVIS

Special Requirements: ON HOLD

On Hold Comments: Awaiting Dark GRB position from Chandra

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.145 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(1)
(5)	Pattern Type=WFC3-IR-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.636 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false		(2)

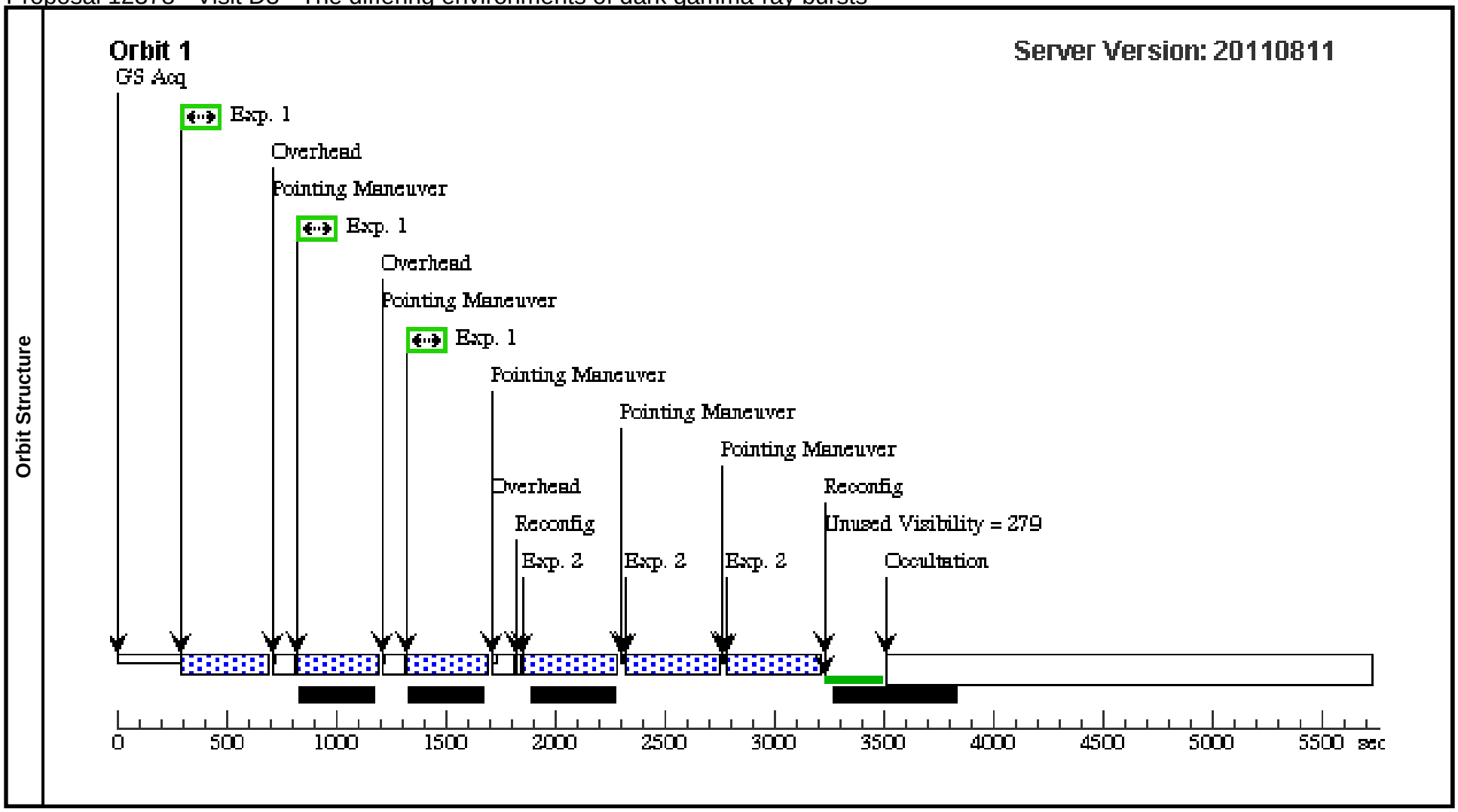
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(6)	GRB-110328A	RA: 16 44 49.9300 (251.2080417d) Dec: +57 34 59.70 (57.58325d) Equinox: J2000		V=23	Reference Frame: ICRS

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/[Actual Dur.]	Orbit
1		(6) GRB-110328A	WFC3/UVIS, ACCUM, UVIS	F606W	CR-SPLIT=NO		Pattern 2, Exps 1-1 in Visit D3 (2)	365 Secs *[==>371.0 Secs (Pattern 1)]* *[==>371.0 Secs (Pattern 2)]* *[==>371.0 Secs (Pattern 3)]*	***[1]***
2		(6) GRB-110328A	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=9; SAMP-SEQ=SPARS50		Pattern 5, Exps 2-2 in Visit D3 (5)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20110811
GS Acq
Exp. 1
Overhead
Pointing Maneuver
Exp. 1
Overhead
Pointing Maneuver
Exp. 1
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Overhead
Reconfig
Exp. 2
Exp. 2
Exp. 2
Reconfig
Unused Visibility = 279
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 12378, Visit W1, implementation Sat Oct 01 01:16:05 GMT 2011

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ORIENT 297D TO 7 D; ORIENT 27D TO 97 D; ORIENT 117D TO 187 D; ORIENT 207D TO 277 D; ON HOLD

On Hold Comments: Awaiting dark GRB trigger

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(4)	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)

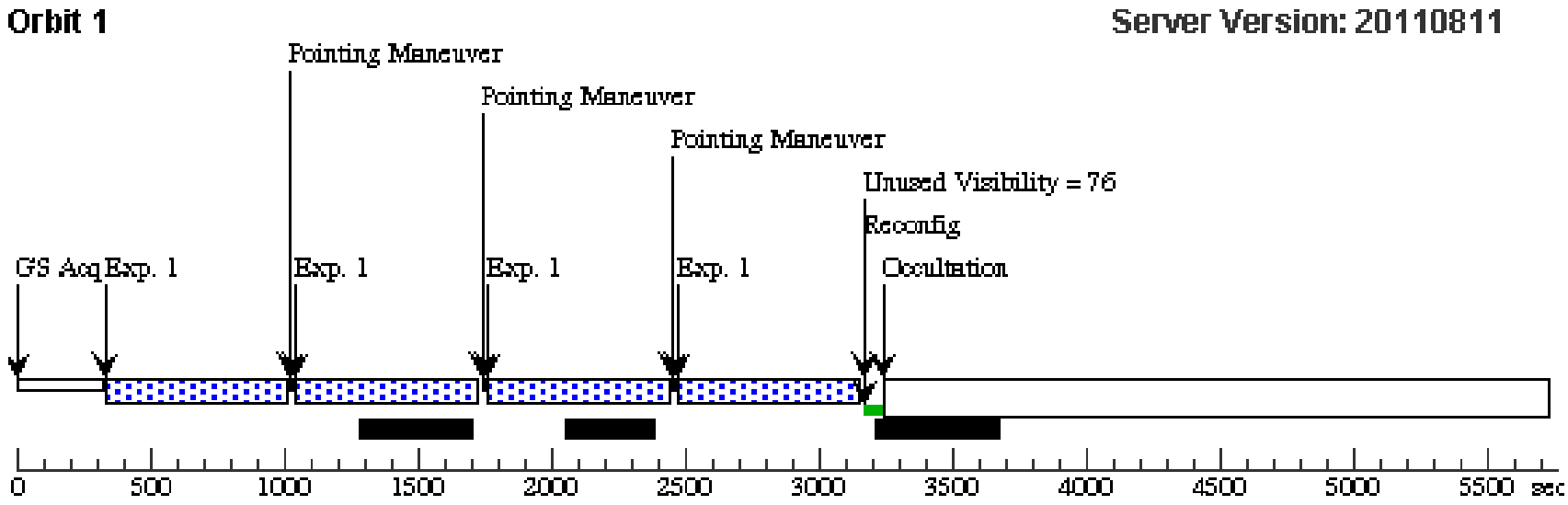
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(8)	GRB110709B	RA: 10 58 37.0900 (164.6545417d) Dec: -23 27 17.60 (-23.45489d) Equinox: J2000		V=25+/-1	Reference Frame: Chandra

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(8) GRB110709B	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=14; SAMP-SEQ=SPARS50		Pattern 4, Exps 1-1 in Visit W1 (4)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***

Orbit Structure



Visit

Proposal 12378, Visit W2 Sat Oct 01 01:16:06 GMT 2011

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: SAME ORIENT AS W1; ON HOLD

On Hold Comments: Awaiting dark GRB trigger

Patterns

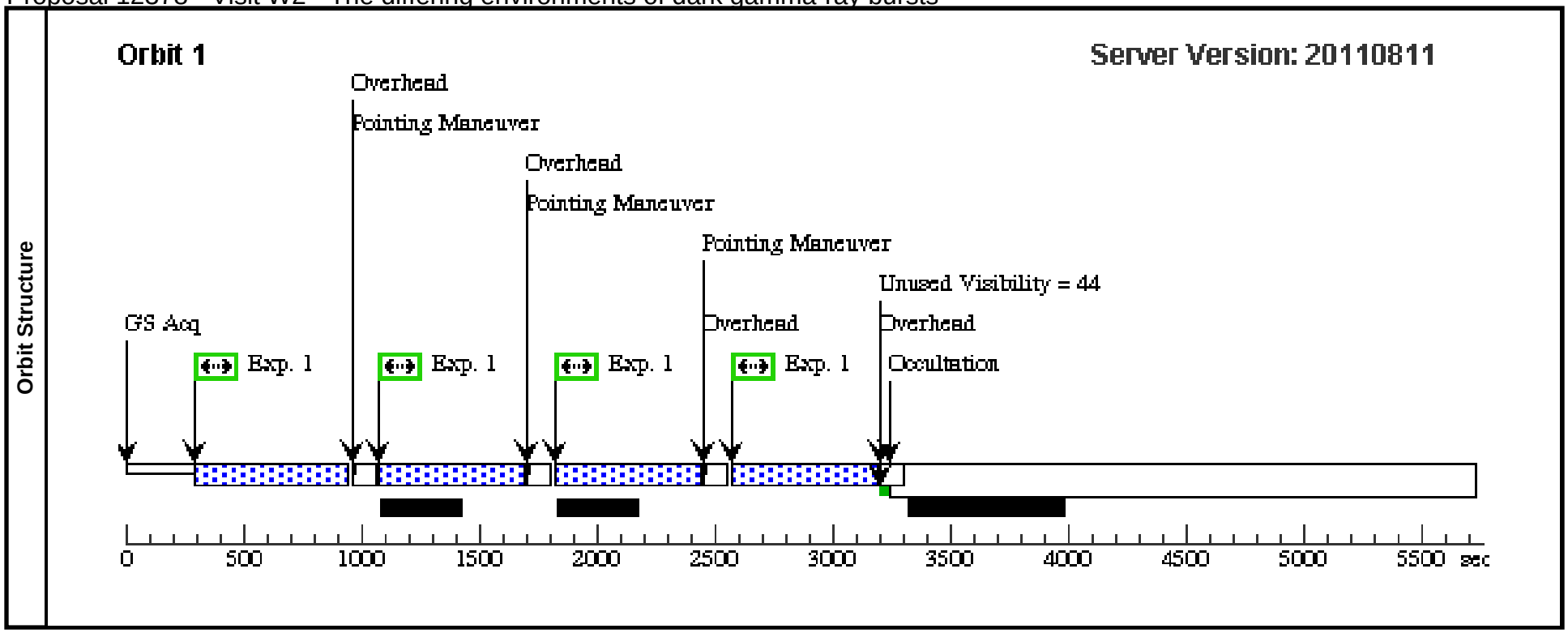
#	Primary Pattern		Secondary Pattern	Exposures
(7)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(8)	GRB110709B	RA: 10 58 37.0900 (164.6545417d) Dec: -23 27 17.60 (-23.45489d) Equinox: J2000		V=25+/-1	Reference Frame: Chandra

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(8) GRB110709B	WFC3/UVIS, ACCUM, UVIS	F606W			Pattern 7, Exps 1-1 in Visit W2 (7)	620 Secs	
								[==>(Pattern 1)] *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20110811
Overhead
Pointing Maneuver
Overhead
Pointing Maneuver
Pointing Maneuver
Unused Visibility = 44
GS Acq
Exp. 1
Exp. 1
Exp. 1
Overhead
Exp. 1
Overhead
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec