13949 - A Chandra/HST survey of dark gamma-ray bursts

Cycle: 22, 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?*
01	(4) GRB141031A	WFC3/IR WFC3/UVIS	1	29-Sep-2015 21:32:02.0	yes
02	(6) GRB140331A	WFC3/IR WFC3/UVIS	1	29-Sep-2015 21:32:04.0	yes
03	(7) GRB150616A	WFC3/IR WFC3/UVIS	1	29-Sep-2015 21:32:06.0	yes
04	(3) DARK-GRB3	WFC3/IR	1	29-Sep-2015 21:32:07.0	yes
05	(5) GRB111005A	WFC3/IR WFC3/UVIS	1	29-Sep-2015 21:32:09.0	yes

5 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 continue 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 most dark GRBs originating in more luminous galaxies than "bright" GRBs. Our new observations will increase the statistical certainty of this result, while simultaneously allowing us to more precisely identify the minority of dark GRBs which most likely originate from the highest redshifts.

OBSERVING DESCRIPTION

We propose to observe HST observations to identify and study the host galaxies of dark GRBs. These bursts will have sub-arcsecond positions from our Chandra observations, and we will use HST to identify the hosts and study their luminosities and morphologies.

In some cases nothing will be known about the host galaxies prior to the observations, in others they may have been identified in ground based imaging. For each host galaxy we will obtain F606W and F160W observations, but may vary the exposure time depending on the information available at the time. For this reason we have included two strategies, the first utilizes F606W and F160W observations within a single orbit with WFC3 (3-point line dithers in each case). The second splits the F606W and F160W observations between 2-orbits, using ACS/WFC3 for the first orbit and WFC3/IR for the second. In each case we will use a 4-point dither within the orbit.

We have utlized the WFC-CTE aperture for the ACS observations to minimize the impact of CTE. On triggering we will also include a POS-TARG offset for the UVIS observations to place the targets close to the corner of the chip (the precise pos-targs, choice of chip may need to be determined by availablility of guide stars etc).

Visit

Proposal 13949, Visit 01, completed Wed Sep 30 01:32:11 GMT 2015

Diagnostic Status: Warning

Scientific Instruments: WFC3/IR, WFC3/UVIS

Special Requirements: ORIENT 28D TO 78 D; ORIENT 118D TO 168 D; ORIENT 208D TO 258 D; ORIENT 298D TO 348 D; BEFORE 30-JAN-2015:00:00:00

Diagnostics

(Visit 01) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=WFC3-UVIS-DITHER-LINE-3PT 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=false		(2)
(4)	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=41.788 Angle Between Sides= Center Pattern=false		(1)

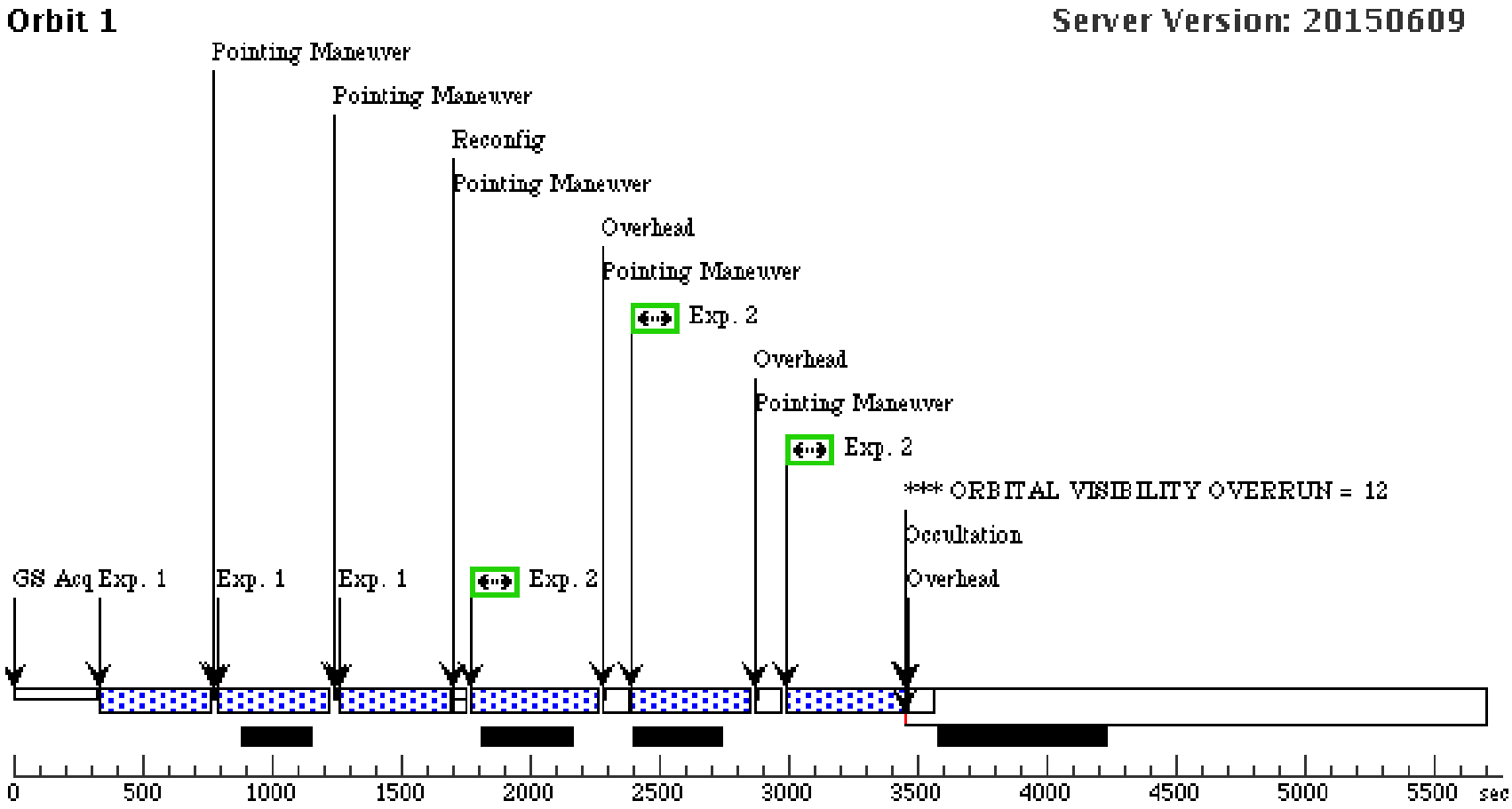
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	GRB141031A	RA: 08 34 26.0880 (128.6087000d) Dec: -59 10 5.79 (-59.16827d) Equinox: J2000		V=25+/-1	Reference Frame: Chandra

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(4) GRB141031A	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=9; SAMP-SEQ=SPARS50		Pattern 4, Exps 1-1 in Visit 01 (4)	402.935899 Secs (1208.808 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	 ***[1]***
2		(4) GRB141031A	WFC3/UVIS, ACCUM, UVIS	F606W		POS TARG -61,-77	Pattern 2, Exps 2-2 in Visit 01 (2)	375 Secs (1395 Secs) *[==>465.0 Secs (Pattern 1)]* *[==>465.0 Secs (Pattern 2)]* *[==>465.0 Secs (Pattern 3)]*	 ***[1]***

Orbit Structure



Visit

Proposal 13949, Visit 02, implementation Wed Sep 30 01:32:11 GMT 2015

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR, WFC3/UVIS

Special Requirements: (none)

Patterns

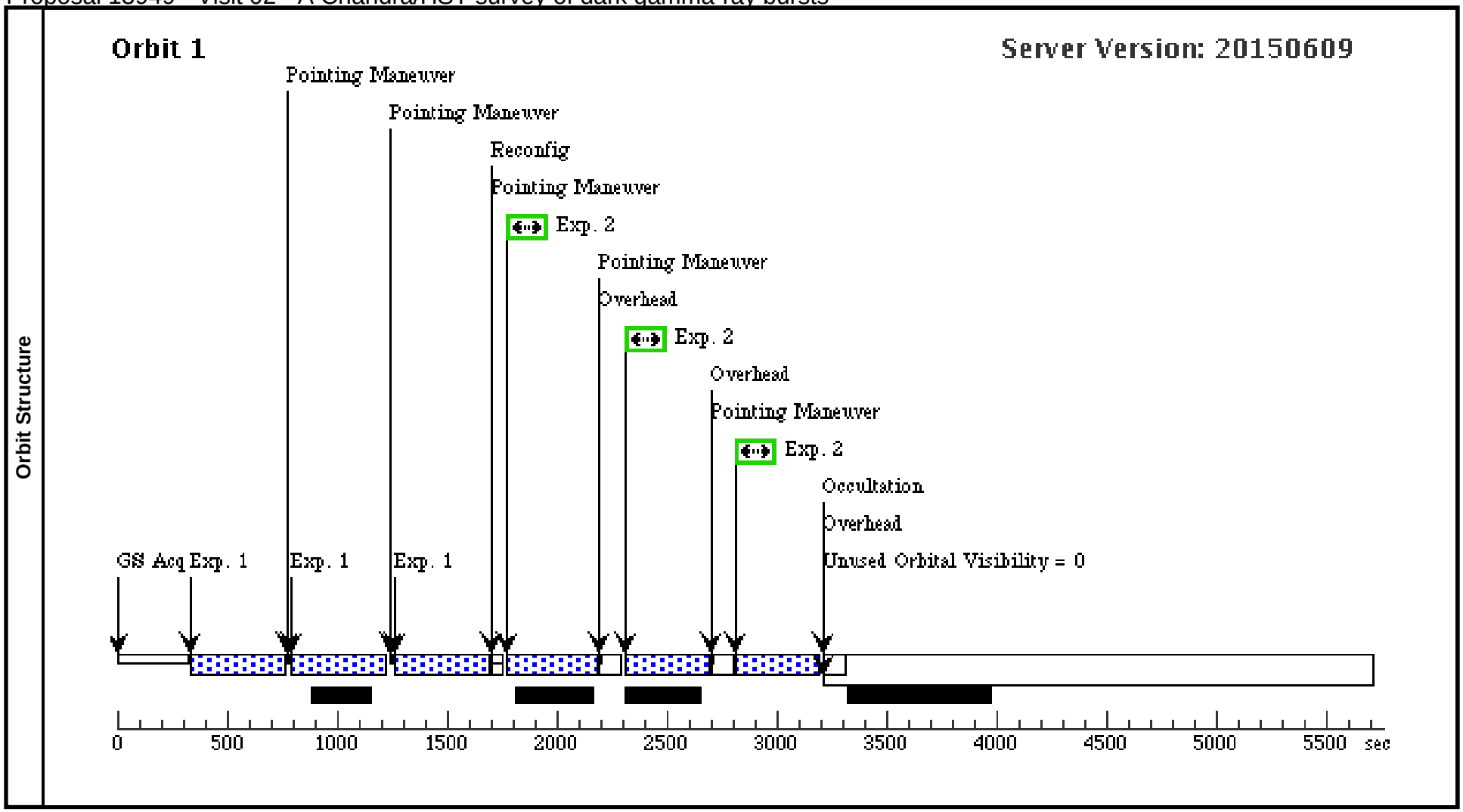
#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=WFC3-UVIS-DITHER-LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(2)
(4)	Pattern Type=WFC3-IR-DITHER-LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.605 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false		(1)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(6)	GRB140331A	RA: 08 59 27.4600 (134.8644167d) Dec: +02 43 2.30 (2.71731d) Equinox: J2000		V=22+/-1	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(6) GRB140331A	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=9; SAMP-SEQ=SPARS50		Pattern 4, Exps 1-1 in Visit 02 (4)	402.935899 Secs (1208.808 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***
2		(6) GRB140331A	WFC3/UVIS, ACCUM, UVIS	F606W		POS TARG -61,-77	Pattern 2, Exps 2-2 in Visit 02 (2)	375 Secs (1137 Secs) *[==>379.0 Secs (Pattern 1)]* *[==>379.0 Secs (Pattern 2)]* *[==>379.0 Secs (Pattern 3)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20150609
Pointing Maneuver
Pointing Maneuver
Reconfig
Pointing Maneuver
Exp. 2
Pointing Maneuver
Overhead
Exp. 2
Overhead
Pointing Maneuver
Exp. 2
Occultation
Overhead
Unused Orbital Visibility = 0
GS Acq
Exp. 1
Exp. 1
Exp. 1
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 13949, Visit 03 Wed Sep 30 01:32:11 GMT 2015

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR, WFC3/UVIS

Special Requirements: (none)

Patterns

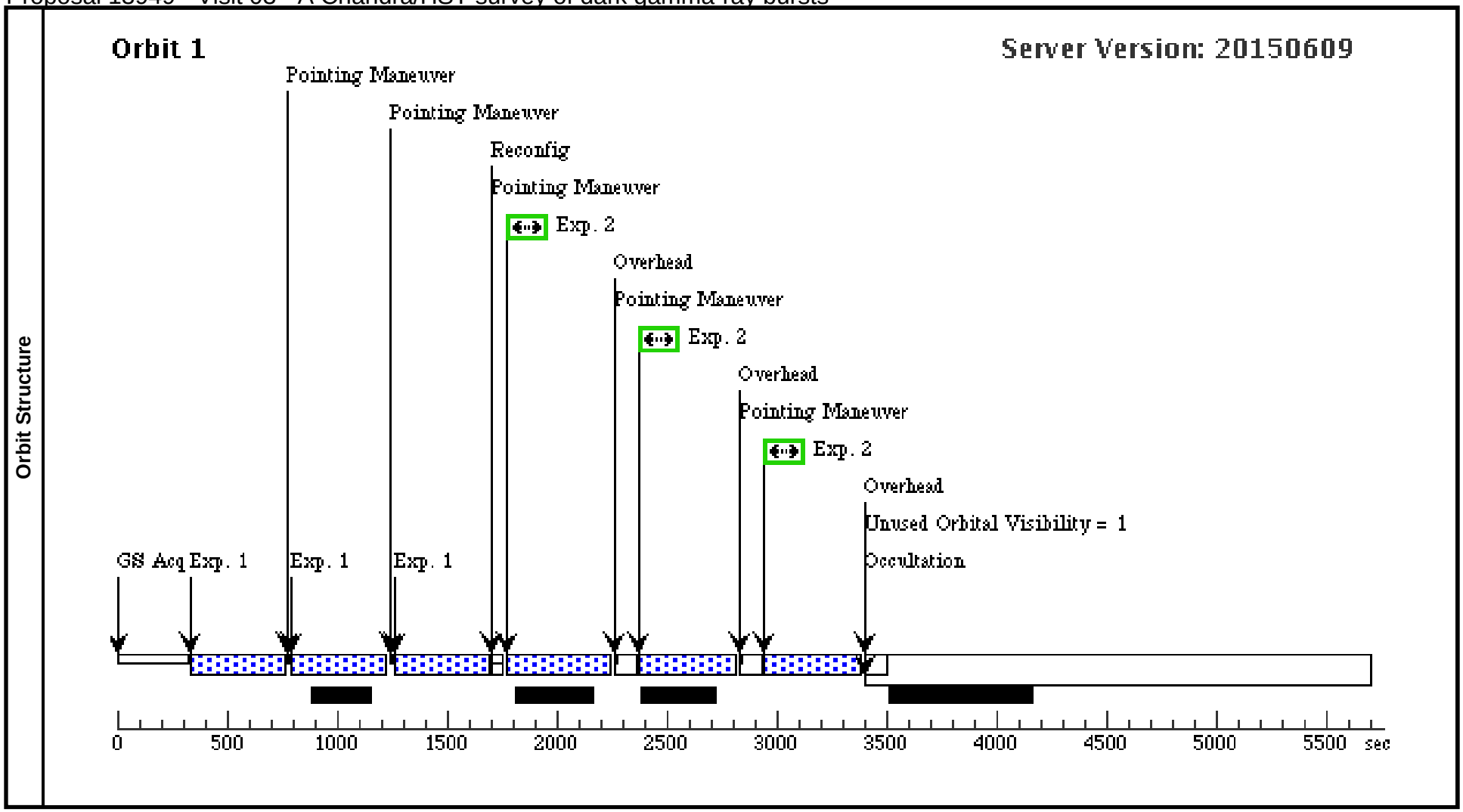
#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=WFC3-UVIS-DITHER-LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(2)
(4)	Pattern Type=WFC3-IR-DITHER-LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.605 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false		(1)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(7)	GRB150616A	RA: 20 58 52.0200 (314.7167500d) Dec: -53 23 38.00 (-53.39389d) Equinox: J2000		V=23+/-1	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(7) GRB150616A	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=9; SAMP-SEQ=SPARS50		Pattern 4, Exps 1-1 in Visit 03 (4)	402.935899 Secs (1208.808 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***
2		(7) GRB150616A	WFC3/UVIS, ACCUM, UVIS	F606W		POS TARG -61,-77	Pattern 2, Exps 2-2 in Visit 03 (2)	375 Secs (1329 Secs) *[==>443.0 Secs (Pattern 1)]* *[==>443.0 Secs (Pattern 2)]* *[==>443.0 Secs (Pattern 3)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20150609
Pointing Maneuver
Pointing Maneuver
Reconfig
Pointing Maneuver
Exp. 2
Overhead
Pointing Maneuver
Exp. 2
Overhead
Pointing Maneuver
Exp. 2
Overhead
Unused Orbital Visibility = 1
Occultation
GS Acq
Exp. 1
Exp. 1
Exp. 1
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 13949, Visit 04, withdrawn Wed Sep 30 01:32:12 GMT 2015

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ON HOLD

On Hold Comments: Awaiting GRB positio

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(3)	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		(2)

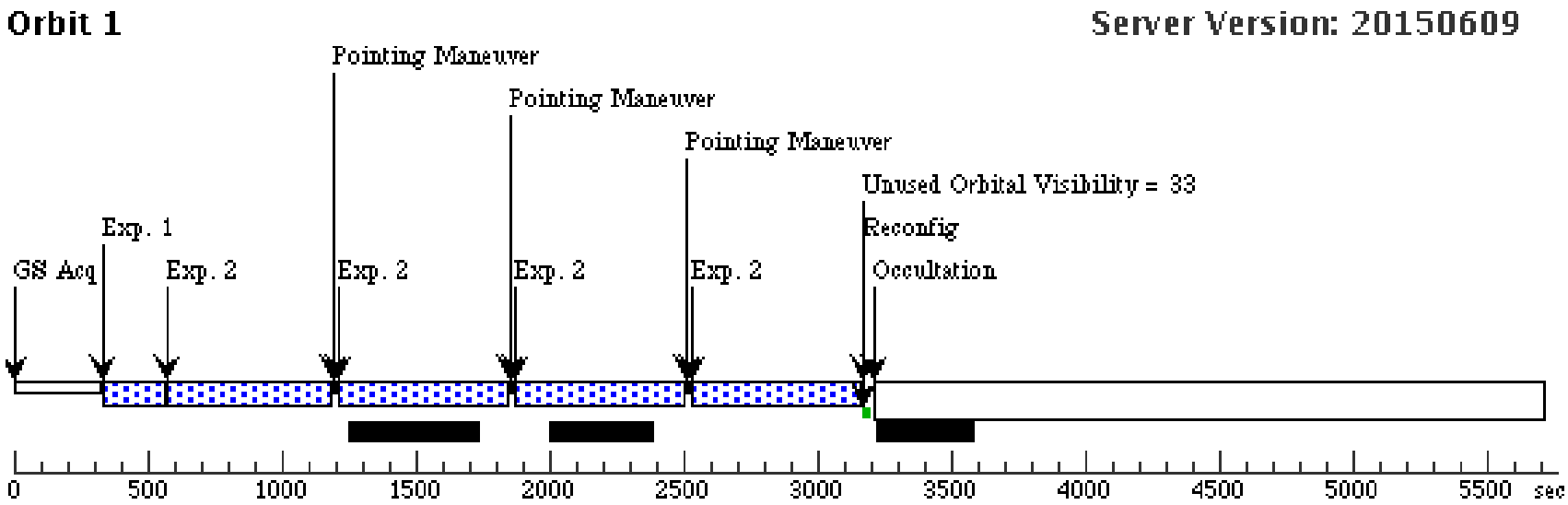
Generic Targets

#	Name	Criteria	Description
(3)	DARK-GRB3	Awaiting GRB trigger	STAR FORMING REGION STARBURST

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(3) DARK-GRB3	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=8; SAMP-SEQ=STEP100			199.231 Secs (199.231 Secs) *[==>]*	***[1]***
2		(3) DARK-GRB3	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=12; SAMP-SEQ=STEP100		Pattern 3, Exps 2-2 in Visit 04 (3)	599.232292 Secs (2396.929 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***

Orbit Structure



Visit

Proposal 13949, Visit 05, completed Wed Sep 30 01:32:12 GMT 2015

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR, WFC3/UVIS

Special Requirements: ORIENT 357D TO 23 D; ORIENT 127D TO 157 D; ORIENT 177D TO 208 D; ORIENT 313D TO 337 D

Patterns

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

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(5)	GRB111005A	RA: 14 53 7.8000 (223.2825000d) Dec: -19 44 12.00 (-19.73667d) Equinox: J2000		V=15	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(5) GRB111005A	WFC3/UVIS, ACCUM, UVIS2	F606W		POS TARG 0,0	Pattern 6, Exps 1-1 in Visit 05 (6)	348 Secs (686 Secs) *[==>338.0 Secs (Pattern 1)]* *[==>(Pattern 2)]*	***[1]***
2		(5) GRB111005A	WFC3/UVIS, ACCUM, UVIS2	F438W	FLASH=10	POS TARG 0,0	Pattern 5, Exps 2-2 in Visit 05 (5)	348 Secs (1044 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***
3		(5) GRB111005A	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=4; SAMP-SEQ=SPARS50		Pattern 7, Exps 3-3 in Visit 05 (7)	152.933644 Secs (305.867 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	***[1]***

Orbit Structure