17606 - Meet Me In the Afterglow: Late-time follow up of the Ultra-luminous GRB 221009A

Cycle: 31, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

Name	*Institution*
Huei Sears (PI) (Contact)	**Northwestern University**
Prof. Ryan Chornock (CoI) (CoPI)	University of California - Berkeley
Dr. Kate Denham Alexander (CoI)	University of Arizona
Prof. Edo Berger (CoI)	Harvard University
Dr. Peter Blanchard (CoI)	Northwestern University
Mr. Wynn Vicente Jacobson-Galan (CoI)	California Institute of Technology
Dr. Tanmoy Laskar (CoI)	University of Utah
Natalie LeBaron (CoI)	University of California - Berkeley
Dr. Raffaella Margutti (CoI)	University of California - Berkeley
Dr. Dan Milisavljevic (CoI)	Purdue University
Prof. Ashley Villar (CoI)	Harvard University

VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) GRB221009A	WFC3/UVIS	3	12-Jun-2024 15:02:26.0	yes
02	(1) GRB221009A	WFC3/IR WFC3/UVIS	3	12-Jun-2024 15:02:27.0	yes
03	(1) GRB221009A	WFC3/IR	3	12-Jun-2024 15:02:29.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
04	(1) GRB221009A	WFC3/IR	3	12-Jun-2024 15:02:30.0	yes

12 Total Orbits Used

ABSTRACT

We propose to acquire deep multi-band HST observations of the most energetic GRB ever observed, GRB 221009A. The subsequent afterglow was also superlatively bright in the radio, optical, and X-ray bands. Late-time HST photometry has revealed slower fading in the optical than the near-IR, inconsistent with expectations for a GRB afterglow. Here we propose late-time HST observations at ~600-722 days after explosion to continue monitoring the evolution of this unprecedented event at optical-NIR wavelengths. The goals of this program are to constrain the timing of the jet break, better model the host galaxy, and investigate the local environment. HST mid-cycle 31 observations are essential for this remarkable object as it will fade by the time of Cycle 32.

OBSERVING DESCRIPTION

In this proposal, we have 12 orbits split across 4 visits. The visits can happen in any order, however we would like visit 1 and 2 to happen within two weeks of eachother and visits 2, 3, and 4 to happen within two weeks of eachother. The goal of this project is to add three additional points to the light curve of the fading GRB afterglow.

Visit 1 (3 orbits): 3 orbits with UVIS/F814W.

Visit 2 (3 orbits): 1 orbit with UVIS/F814W and 2 orbits with IR/F110W and IR/F160W. The IR orbits have ~800s in F160W and ~1600s in F110W.

Visit 3 (3 orbits): 3 orbits with IR/F110W and IR/F160W. Each orbit has ~800s in F160W and ~1600s in F110W.

Visit 4 (3 orbits): 3 orbits with IR/F110W and IR/F160W. Each orbit has ~800s in F160W and ~1600s in F110W.

Proposal 17606 - Visit 01 - Meet Me In the Afterglow: Late-time follow up of the Ultra-luminous GRB 221009A

Visit

Proposal 17606, Visit 01, scheduling Wed Jun 12 19:02:31 GMT 2024

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 10D TO 70 D; ORIENT 100D TO 160 D; ORIENT 190D TO 250 D; ORIENT 280D TO 340 D; AFTER 13-AUG-2024:00:00:00

Fixed Targets

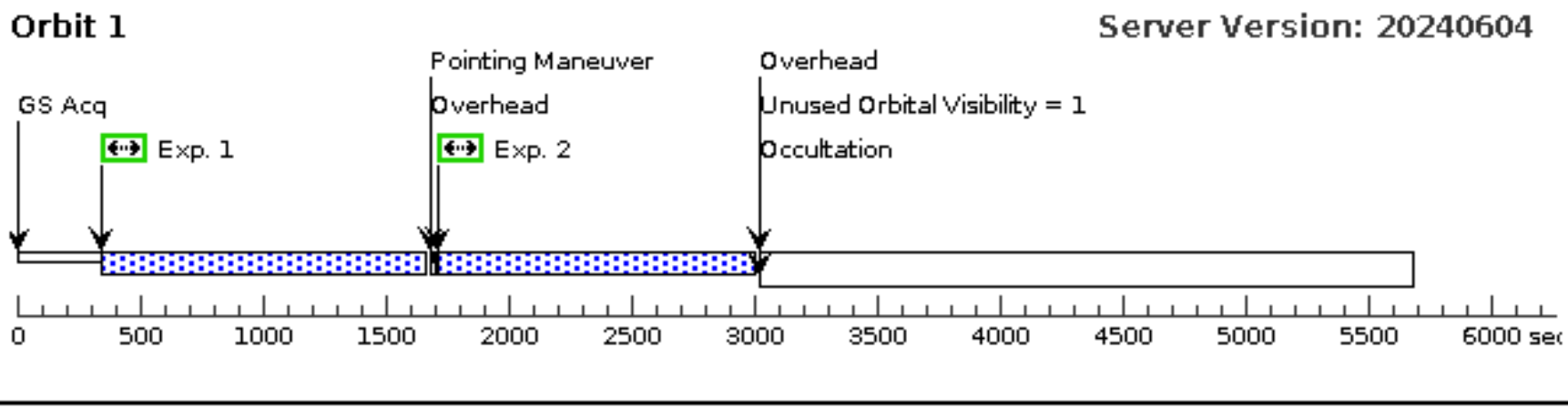
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	GRB221009A	RA: 19 13 3.5008 (288.2645867d) Dec: +19 46 24.23 (19.77340d) Equinox: J2000	Redshift: 0.151	V=27.5 fading	Reference Frame: ICRS

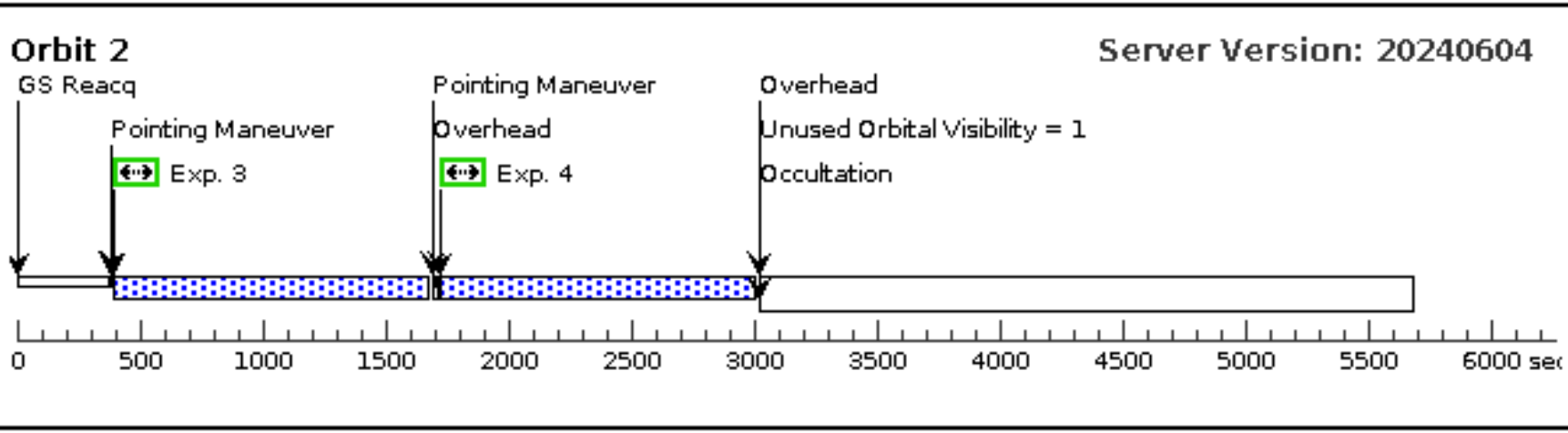
Comments:
Category=EXT-STAR
Description=[GAMMA RAY BURSTER]

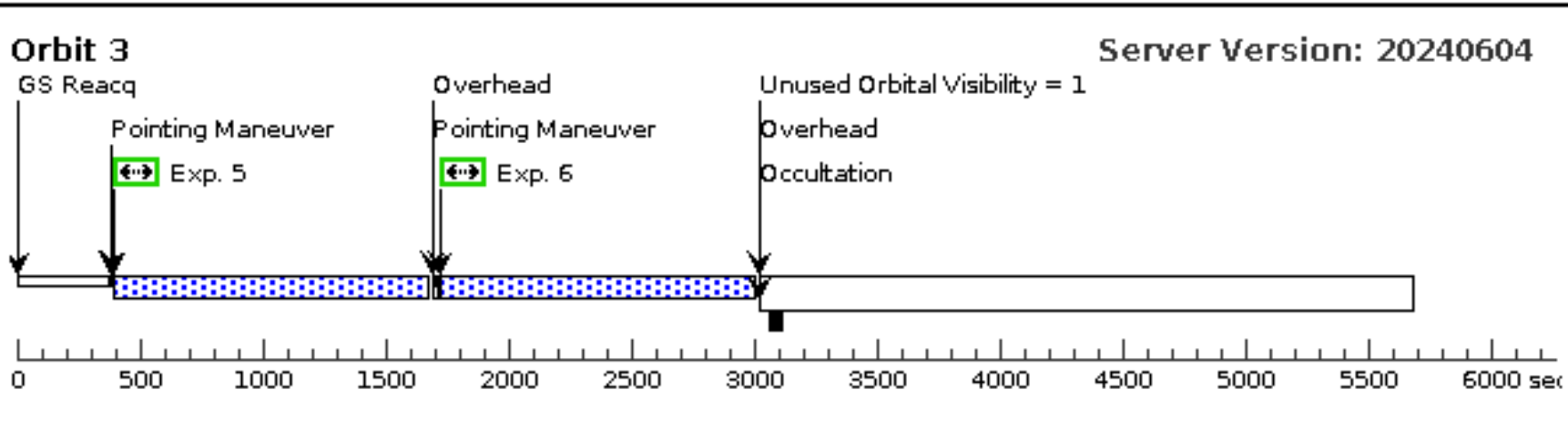
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) GRB221009A	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W		POS TARG 0,0	Sequence 1-2 Non-Int in Visit 01	1330 Secs (1292 Secs) *[==>1292.0 Secs]*	 ***[1]***
2		(1) GRB221009A	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W		POS TARG 0.158,0.070	Sequence 1-2 Non-Int in Visit 01	1330 Secs (1292 Secs) *[==>1292.0 Secs]*	 ***[1]***
3		(1) GRB221009A	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W		POS TARG 0.099,0.165	Sequence 3-4 Non-Int in Visit 01	1330 Secs (1282 Secs) *[==>1282.0 Secs]*	 ***[2]***
4		(1) GRB221009A	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W		POS TARG -0.059,0.095	Sequence 3-4 Non-Int in Visit 01	1330 Secs (1282 Secs) *[==>1282.0 Secs]*	 ***[2]***
5		(1) GRB221009A	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W		POS TARG 0.109,0.116	Sequence 5-6 Non-Int in Visit 01	1330 Secs (1282 Secs) *[==>1282.0 Secs]*	 ***[3]***
6		(1) GRB221009A	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W		POS TARG 0.267,0.186	Sequence 5-6 Non-Int in Visit 01	1330 Secs (1282 Secs) *[==>1282.0 Secs]*	 ***[3]***

Orbit Structure







Visit

Proposal 17606, Visit 02, implementation Wed Jun 12 19:02:31 GMT 2024

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR, WFC3/UVIS

Special Requirements: ORIENT 10D TO 70 D; ORIENT 100D TO 160 D; ORIENT 190D TO 250 D; ORIENT 280D TO 340 D; SEQ 01,02 WITHIN 14 D

Fixed Targets

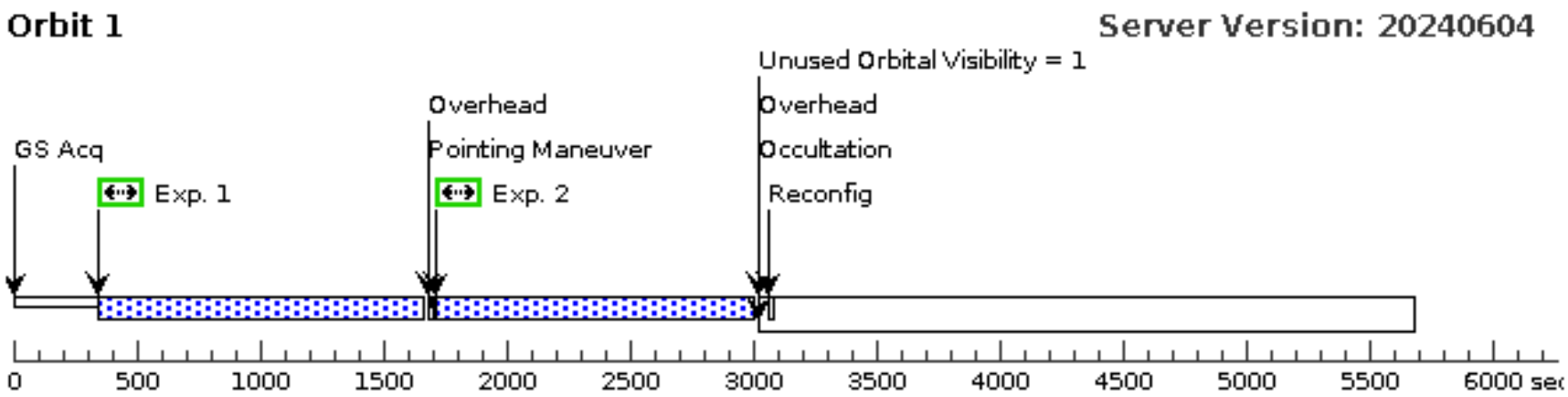
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	GRB221009A	RA: 19 13 3.5008 (288.2645867d) Dec: +19 46 24.23 (19.77340d) Equinox: J2000	Redshift: 0.151	V=27.5 fading	Reference Frame: ICRS

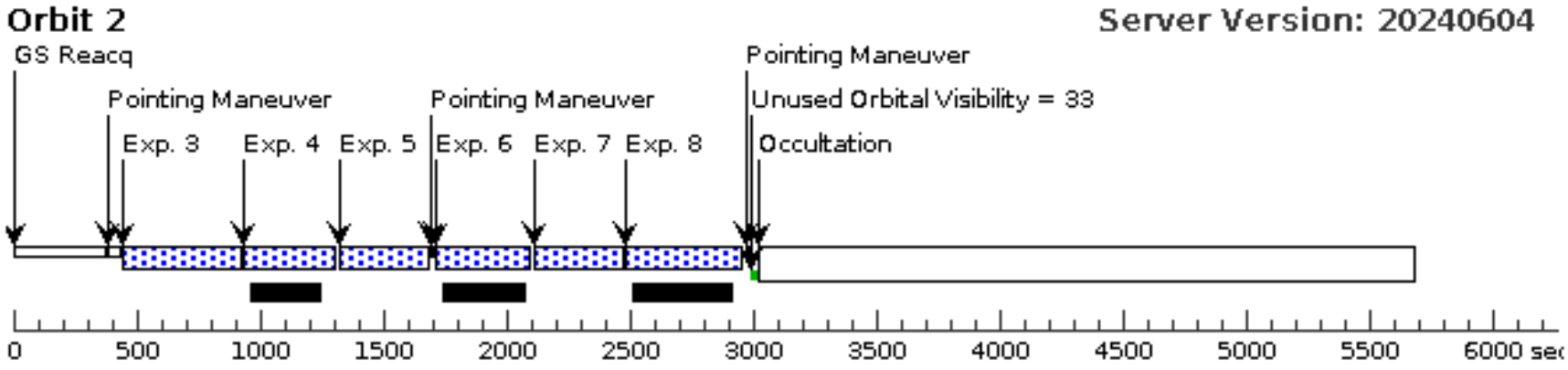
Comments:
Category=EXT-STAR
Description=[GAMMA RAY BURSTER]

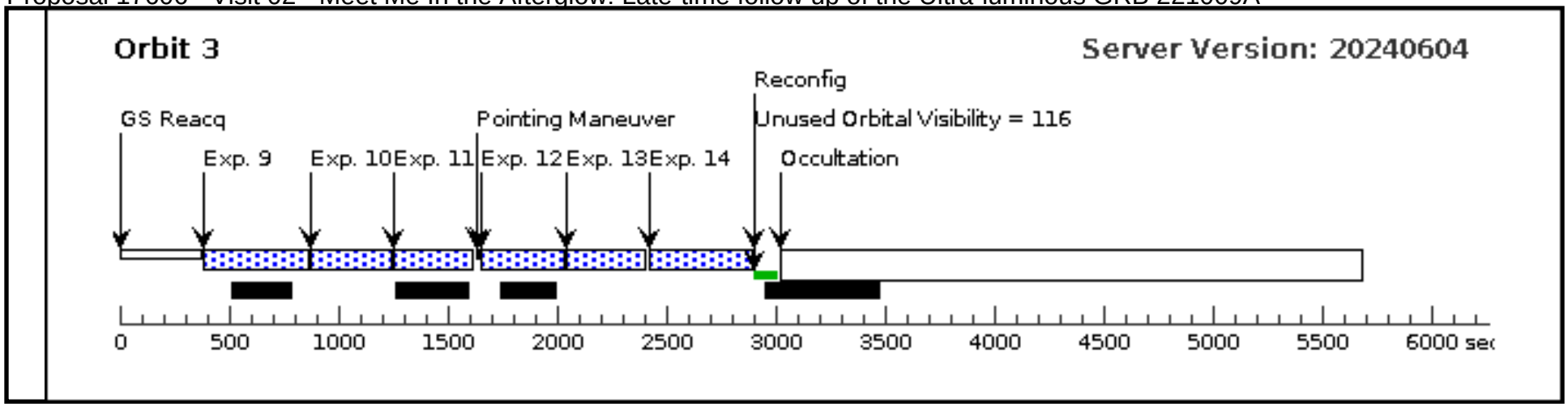
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) GRB221009A	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W		POS TARG 0.208,0.281	Sequence 1-2 Non-Int in Visit 02	1292 Secs (1292 Secs) *[==>]*	***[1]***
2		(1) GRB221009A	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W		POS TARG 0.050,0.211	Sequence 1-2 Non-Int in Visit 02	1292 Secs (1292 Secs) *[==>]*	***[1]***
3		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=10; SAMP-SEQ=SPARS50	POS TARG 0.000,0.000	Sequence 3-8 Non-Int in Visit 02	452.93635 Secs (452.936 Secs) *[==>]*	***[2]***
4		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 0.000,0.000	Sequence 3-8 Non-Int in Visit 02	352.935448 Secs (352.935 Secs) *[==>]*	***[2]***
5		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 0.000,0.000	Sequence 3-8 Non-Int in Visit 02	352.935448 Secs (352.935 Secs) *[==>]*	***[2]***
6		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 0.694,0.048	Sequence 3-8 Non-Int in Visit 02	352.935448 Secs (352.935 Secs) *[==>]*	***[2]***
7		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 0.694,0.048	Sequence 3-8 Non-Int in Visit 02	352.935448 Secs (352.935 Secs) *[==>]*	***[2]***
8		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=10; SAMP-SEQ=SPARS50	POS TARG 0.694,0.048	Sequence 3-8 Non-Int in Visit 02	452.93635 Secs (452.936 Secs) *[==>]*	***[2]***
9		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=10; SAMP-SEQ=SPARS50	POS TARG 1.388,0.095	Sequence 9-14 Non-Int in Visit 02	452.93635 Secs (452.936 Secs) *[==>]*	***[3]***
10		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 1.388,0.095	Sequence 9-14 Non-Int in Visit 02	352.935448 Secs (352.935 Secs) *[==>]*	***[3]***
11		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 1.388,0.095	Sequence 9-14 Non-Int in Visit 02	352.935448 Secs (352.935 Secs) *[==>]*	***[3]***
12		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 0.051,0.620	Sequence 9-14 Non-Int in Visit 02	352.935448 Secs (352.935 Secs) *[==>]*	***[3]***
13		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 0.051,0.620	Sequence 9-14 Non-Int in Visit 02	352.935448 Secs (352.935 Secs) *[==>]*	***[3]***
14		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=10; SAMP-SEQ=SPARS50	POS TARG 0.051,0.620	Sequence 9-14 Non-Int in Visit 02	452.93635 Secs (452.936 Secs) *[==>]*	***[3]***

Orbit Structure



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Server Version: 20240604
Reconfig
GS Reacq
Pointing Maneuver
Unused Orbital Visibility = 116
Exp. 9
Exp. 10
Exp. 11
Exp. 12
Exp. 13
Exp. 14
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000 sec

Proposal 17606 - Visit 03 - Meet Me In the Afterglow: Late-time follow up of the Ultra-luminous GRB 221009A

Visit

Proposal 17606, Visit 03, implementation Wed Jun 12 19:02:31 GMT 2024

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ORIENT 10D TO 70 D; ORIENT 100D TO 160 D; ORIENT 190D TO 250 D; ORIENT 280D TO 340 D; SEQ 02,03 WITHIN 14 D

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	GRB221009A	RA: 19 13 3.5008 (288.2645867d) Dec: +19 46 24.23 (19.77340d) Equinox: J2000	Redshift: 0.151	V=27.5 fading	Reference Frame: ICRS

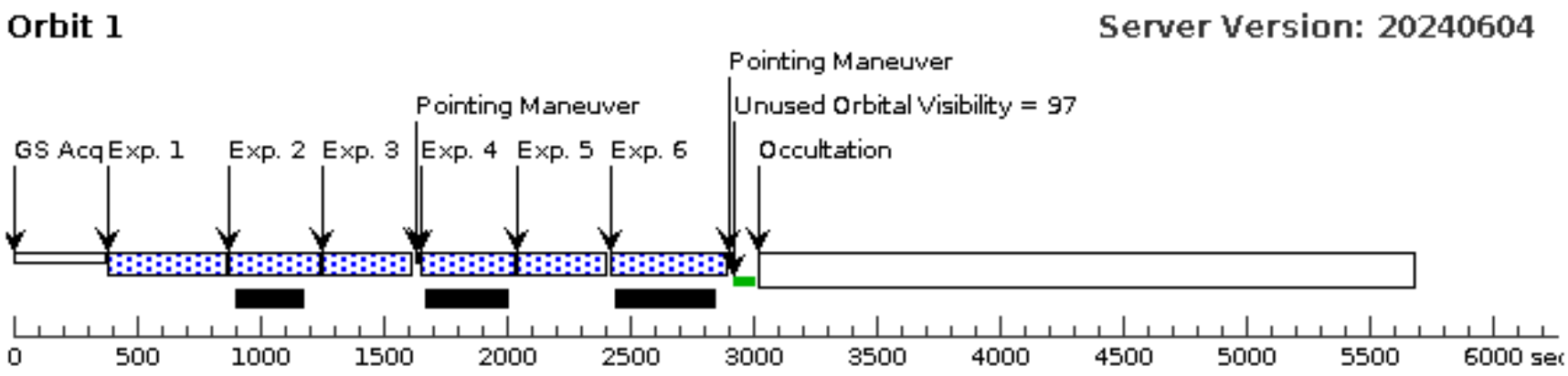
Comments:
Category=EXT-STAR
Description=[GAMMA RAY BURSTER]

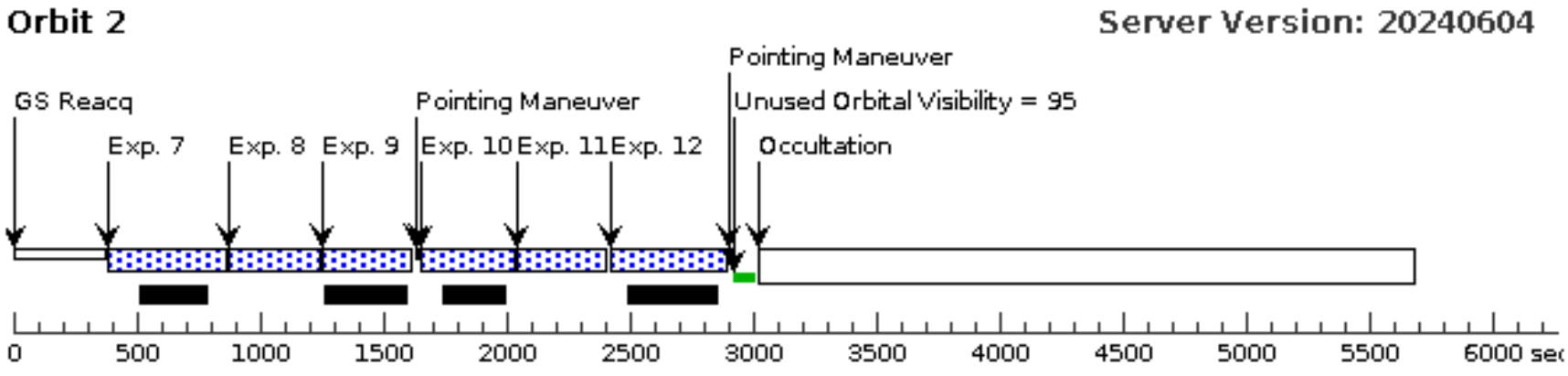
Exposures

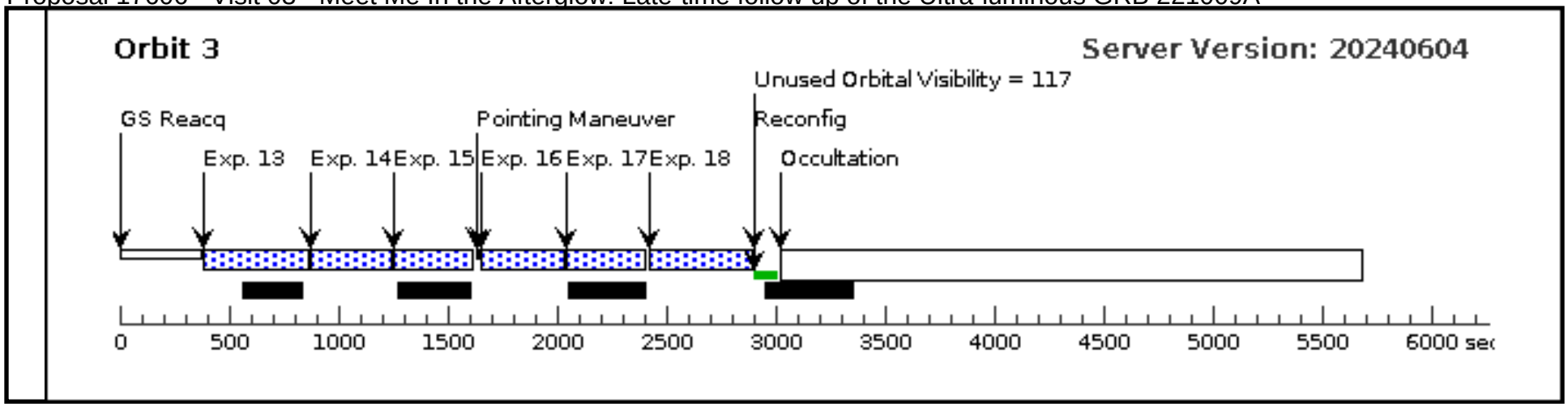
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=10; SAMP-SEQ=SPARS50	POS TARG 0.745,0.668	Sequence 1-6 Non-Int in Visit 03	452.93635 Secs (452.936 Secs) *[==>]*	*[1]*
2		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 0.745,0.668	Sequence 1-6 Non-Int in Visit 03	352.935448 Secs (352.935 Secs) *[==>]*	*[1]*
3		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 0.745,0.668	Sequence 1-6 Non-Int in Visit 03	352.935448 Secs (352.935 Secs) *[==>]*	*[1]*
4		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 1.440,0.716	Sequence 1-6 Non-Int in Visit 03	352.935448 Secs (352.935 Secs) *[==>]*	*[1]*
5		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 1.440,0.716	Sequence 1-6 Non-Int in Visit 03	352.935448 Secs (352.935 Secs) *[==>]*	*[1]*
6		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=10; SAMP-SEQ=SPARS50	POS TARG 1.440,0.716	Sequence 1-6 Non-Int in Visit 03	452.93635 Secs (452.936 Secs) *[==>]*	*[1]*
7		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=10; SAMP-SEQ=SPARS50	POS TARG 0.373,1.242	Sequence 7-12 Non-Int in Visit 03	452.93635 Secs (452.936 Secs) *[==>]*	*[2]*
8		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 0.373,1.242	Sequence 7-12 Non-Int in Visit 03	352.935448 Secs (352.935 Secs) *[==>]*	*[2]*
9		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 0.373,1.242	Sequence 7-12 Non-Int in Visit 03	352.935448 Secs (352.935 Secs) *[==>]*	*[2]*
10		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 1.067,1.289	Sequence 7-12 Non-Int in Visit 03	352.935448 Secs (352.935 Secs) *[==>]*	*[2]*
11		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 1.067,1.289	Sequence 7-12 Non-Int in Visit 03	352.935448 Secs (352.935 Secs) *[==>]*	*[2]*
12		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=10; SAMP-SEQ=SPARS50	POS TARG 1.067,1.289	Sequence 7-12 Non-Int in Visit 03	452.93635 Secs (452.936 Secs) *[==>]*	*[2]*
13		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=10; SAMP-SEQ=SPARS50	POS TARG 0,0	Sequence 13-18 Non-Int in Visit 03	452.93635 Secs (452.936 Secs) *[==>]*	*[3]*
14		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 0,0	Sequence 13-18 Non-Int in Visit 03	352.935448 Secs (352.935 Secs) *[==>]*	*[3]*
15		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 0,0	Sequence 13-18 Non-Int in Visit 03	352.935448 Secs (352.935 Secs) *[==>]*	*[3]*
16		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 0.694,0.048	Sequence 13-18 Non-Int in Visit 03	352.935448 Secs (352.935 Secs) *[==>]*	*[3]*

	17	(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 0.694,0.048	Sequence 13-18 Non-Int in Visit 03	352.935448 Secs (352.935 Secs) *[==>]*	 ***[3]***
	18	(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=10; SAMP-SEQ=SPARS50	POS TARG 0.694,0.048	Sequence 13-18 Non-Int in Visit 03	452.93635 Secs (452.936 Secs) *[==>]*	 ***[3]***

Orbit Structure






Orbit 3
Server Version: 20240604
Unused Orbital Visibility = 117
GS Reacq
Pointing Maneuver
Reconfig
Exp. 13
Exp. 14
Exp. 15
Exp. 16
Exp. 17
Exp. 18
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000 sec

Visit

Proposal 17606, Visit 04, implementation Wed Jun 12 19:02:31 GMT 2024

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ORIENT 10D TO 70 D; ORIENT 100D TO 160 D; ORIENT 190D TO 250 D; ORIENT 280D TO 340 D; SEQ 03,04 WITHIN 14 D

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	GRB221009A	RA: 19 13 3.5008 (288.2645867d) Dec: +19 46 24.23 (19.77340d) Equinox: J2000	Redshift: 0.151	V=27.5 fading	Reference Frame: ICRS

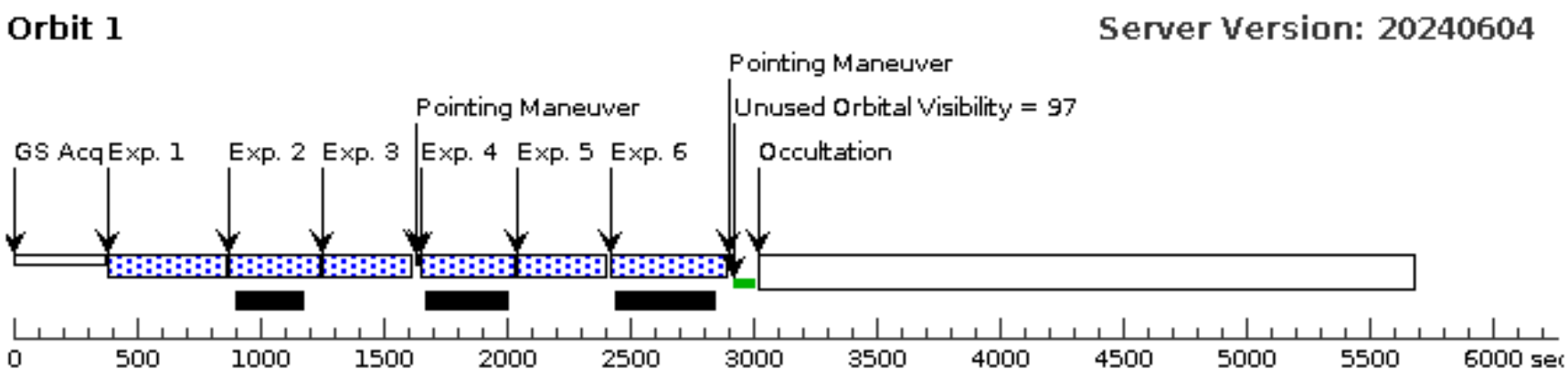
Comments:
Category=EXT-STAR
Description=[GAMMA RAY BURSTER]

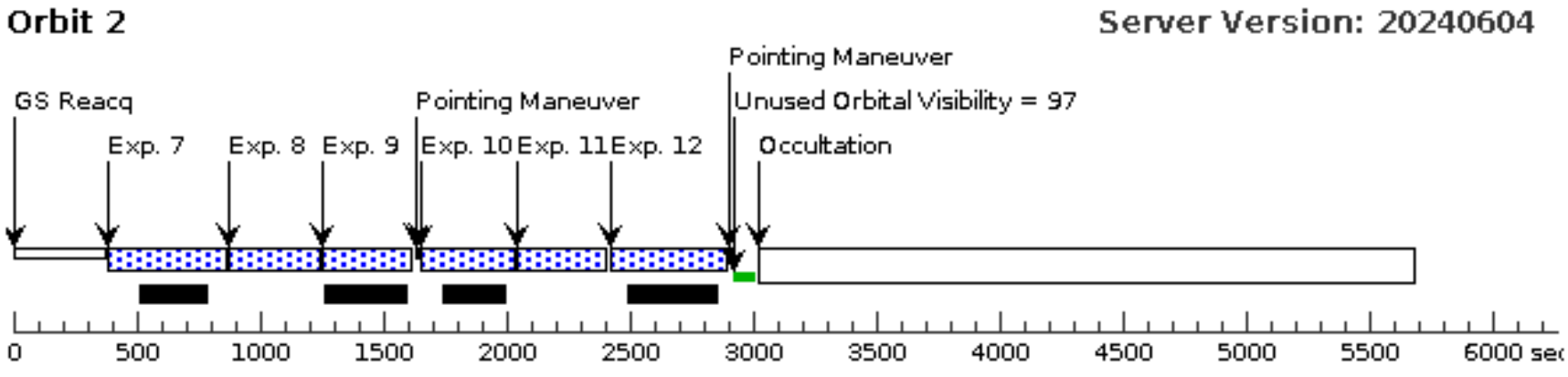
Exposures

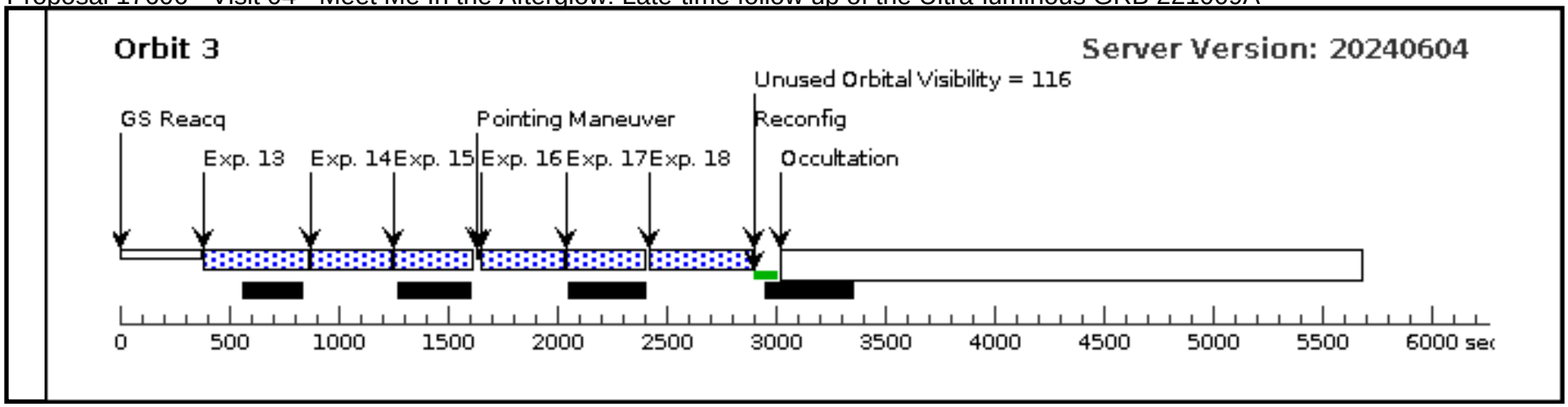
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=10; SAMP-SEQ=SPARS50	POS TARG 0.745,0.668	Sequence 1-6 Non-Int in Visit 04	452.93635 Secs (452.936 Secs) *[==>]*	*[1]*
2		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 0.745,0.668	Sequence 1-6 Non-Int in Visit 04	352.935448 Secs (352.935 Secs) *[==>]*	*[1]*
3		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 0.745,0.668	Sequence 1-6 Non-Int in Visit 04	352.935448 Secs (352.935 Secs) *[==>]*	*[1]*
4		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 1.440,0.716	Sequence 1-6 Non-Int in Visit 04	352.935448 Secs (352.935 Secs) *[==>]*	*[1]*
5		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 1.440,0.716	Sequence 1-6 Non-Int in Visit 04	352.935448 Secs (352.935 Secs) *[==>]*	*[1]*
6		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=10; SAMP-SEQ=SPARS50	POS TARG 1.440,0.716	Sequence 1-6 Non-Int in Visit 04	452.93635 Secs (452.936 Secs) *[==>]*	*[1]*
7		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=10; SAMP-SEQ=SPARS50	POS TARG 0.373,1.242	Sequence 7-12 Non-Int in Visit 04	452.93635 Secs (452.936 Secs) *[==>]*	*[2]*
8		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 0.373,1.242	Sequence 7-12 Non-Int in Visit 04	352.935448 Secs (352.935 Secs) *[==>]*	*[2]*
9		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 0.373,1.242	Sequence 7-12 Non-Int in Visit 04	352.935448 Secs (352.935 Secs) *[==>]*	*[2]*
10		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 1.067,1.289	Sequence 7-12 Non-Int in Visit 04	352.935448 Secs (352.935 Secs) *[==>]*	*[2]*
11		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 1.067,1.289	Sequence 7-12 Non-Int in Visit 04	352.935448 Secs (352.935 Secs) *[==>]*	*[2]*
12		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=10; SAMP-SEQ=SPARS50	POS TARG 1.067,1.289	Sequence 7-12 Non-Int in Visit 04	452.93635 Secs (452.936 Secs) *[==>]*	*[2]*
13		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=10; SAMP-SEQ=SPARS50	POS TARG 1.388,0.095	Sequence 13-18 Non-Int in Visit 04	452.93635 Secs (452.936 Secs) *[==>]*	*[3]*
14		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 1.388,0.095	Sequence 13-18 Non-Int in Visit 04	352.935448 Secs (352.935 Secs) *[==>]*	*[3]*
15		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 1.388,0.095	Sequence 13-18 Non-Int in Visit 04	352.935448 Secs (352.935 Secs) *[==>]*	*[3]*
16		(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 0.051,0.620	Sequence 13-18 Non-Int in Visit 04	352.935448 Secs (352.935 Secs) *[==>]*	*[3]*

	17	(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=8; SAMP-SEQ=SPARS50	POS TARG 0.051,0.620	Sequence 13-18 Non-Int in Visit 04	352.935448 Secs (352.935 Secs) *[==>]*	 ***[3]***
	18	(1) GRB221009A	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=10; SAMP-SEQ=SPARS50	POS TARG 0.051,0.620	Sequence 13-18 Non-Int in Visit 04	452.93635 Secs (452.936 Secs) *[==>]*	 ***[3]***

Orbit Structure






Orbit 3
Server Version: 20240604
Unused Orbital Visibility = 116
GS Reacq
Pointing Maneuver
Reconfig
Exp. 13
Exp. 14
Exp. 15
Exp. 16
Exp. 17
Exp. 18
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000 sec