16846 - Identifying the fingerprints of r-process heavy metals in a short GRB

Cycle: 29, 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	(1) KILONOVA	WFC3/IR	1	13-Apr-2022 11:00:30.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
02	(1) KILONOVA	WFC3/IR	1	13-Apr-2022 11:00:31.0	yes
03	(1) KILONOVA	WFC3/UVIS	1	13-Apr-2022 11:00:32.0	yes
04	(2) GRB211211A	WFC3/UVIS	1	13-Apr-2022 11:00:32.0	yes
05	(2) GRB211211A	WFC3/IR	1	13-Apr-2022 11:00:33.0	yes
06	(2) GRB211211A	WFC3/IR	1	13-Apr-2022 11:00:33.0	yes
07	(1) KILONOVA	WFC3/IR	1	13-Apr-2022 11:00:34.0	yes
08	(1) KILONOVA	WFC3/IR	1	13-Apr-2022 11:00:34.0	yes
09	(1) KILONOVA	WFC3/UVIS	1	13-Apr-2022 11:00:35.0	yes
10	(1) KILONOVA	WFC3/IR	1	13-Apr-2022 11:00:36.0	yes
11	(1) KILONOVA	WFC3/IR	1	13-Apr-2022 11:00:37.0	yes

11 Total Orbits Used

ABSTRACT

The afterglow of some short GRBs displays a late-time rebrightening, visible in the near-infrared a few days after the burst. This late-time bump could be explained as kilonova emission, providing a direct link to neutron star mergers, and a compelling proof for the synthesis of heavy nuclei through the rapid neutron capture process (r-process). We propose a multi-wavelength follow-up campaign of a nearby (z<0.4) short GRB in order to detect the expected kilonova bump and constrain its properties. Multi-band observations, and in particular X-rays, are critical to pin down the nature of the observed rebrightening, and to distinguish it from the standard afterglow emission.

OBSERVING DESCRIPTION

The main goal of this proposal is to identify a nearby kilonova and map its color evolution.
We will image the field using the WFC3/UVIS and IR cameras. The choice of filters is preliminary and will be adjusted at the time of the trigger.
The Phase2 file contains a few configurations which we consider more likely to be used, based on our previous experience.
In the case of a nearby event, we will perform IR spectroscopic observations with both grisms G102 and G141.

Visit

Proposal 16846, V1_IRSPEC1 (01), implementation Wed Apr 13 15:00:37 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ON HOLD ; TOO RESPONSE TIME 3.0D

On Hold Comments: Awaiting for trigger

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(3)	Pattern Type=WFC3-IR-DITHER-LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=1.56 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false		(1)
(4)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.605 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false		(2)

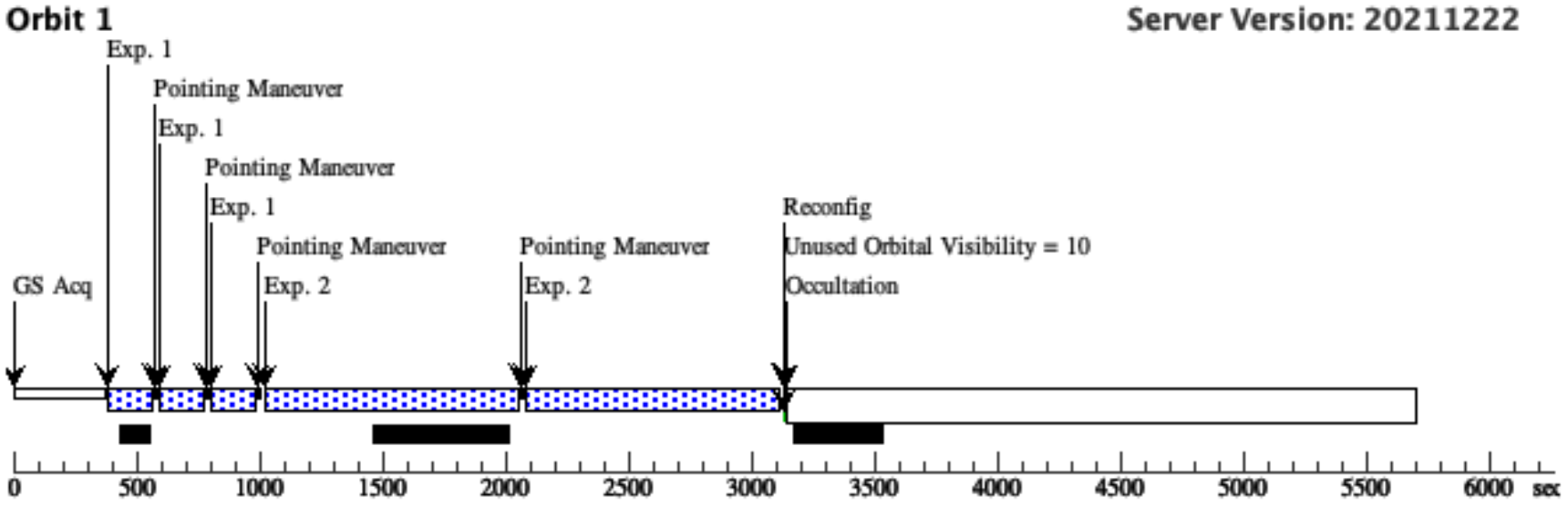
Generic Targets

#	Name	Criteria	Description
(1)	KILONOVA	Redshift z<0.4	EJECTA NEUTRON STAR

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) KILONOVA	WFC3/IR, MULTIACCUM, GRISM1024	F125W	NSAMP=8; SAMP-SEQ=STEP50		Pattern 3, Exps 1-1 in V1_IRSPEC1 (01) (3)	149.231128 Secs (447.693 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	 ***[1]***
2		(1) KILONOVA	WFC3/IR, MULTIACCUM, GRISM1024	G102	NSAMP=11; SAMP-SEQ=SPARS100		Pattern 4, Exps 2-2 in V1_IRSPEC1 (01) (4)	1002.935521 Secs (2005.871 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***

Orbit Structure



Visit

Proposal 16846, V1_IRSPEC2 (02), implementation Wed Apr 13 15:00:37 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ON HOLD ; TOO RESPONSE TIME 3.0D

On Hold Comments: Awaiting for trigger

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(3)	Pattern Type=WFC3-IR-DITHER-LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=1.56 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false		(1)
(4)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.605 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false		(2)

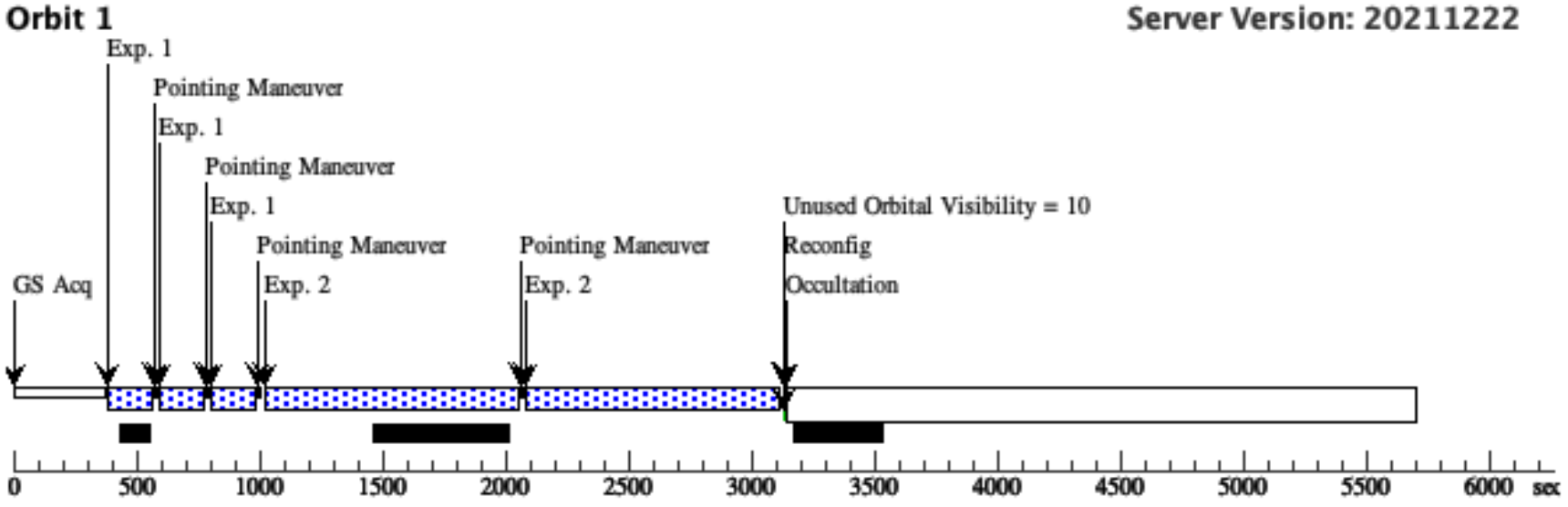
Generic Targets

#	Name	Criteria	Description
(1)	KILONOVA	Redshift z<0.4	EJECTA NEUTRON STAR

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) KILONOVA	WFC3/IR, MULTIACCUM, GRISM1024	F140W	NSAMP=8; SAMP-SEQ=STEP50		Pattern 3, Exps 1-1 in V1_IRSPEC2 (02) (3)	149.231128 Secs (447.693 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	 ***[1]***
2		(1) KILONOVA	WFC3/IR, MULTIACCUM, GRISM1024	G141	NSAMP=11; SAMP-SEQ=SPARS100		Pattern 4, Exps 2-2 in V1_IRSPEC2 (02) (4)	1002.935521 Secs (2005.871 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***

Orbit Structure



Visit

Proposal 16846, V1_UVIMA (03), implementation Wed Apr 13 15:00:37 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: ON HOLD ; TOO RESPONSE TIME 3.0D

On Hold Comments: Awaiting for trigger

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	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)

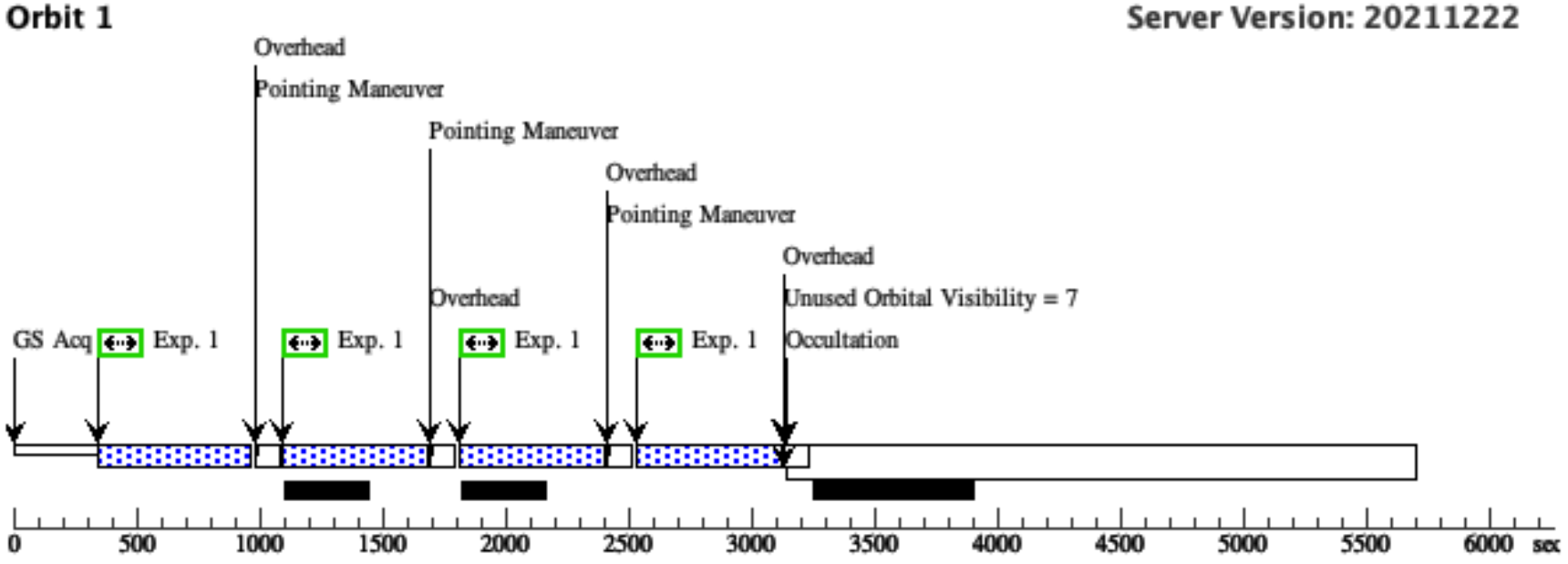
Generic Targets

#	Name	Criteria	Description
(1)	KILONOVA	Redshift z<0.4	EJECTA NEUTRON STAR

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) KILONOVA	WFC3/UVIS, ACCUM, UVIS	F606W	CR-SPLIT=NO		Pattern 1, Exps 1-1 in V1_UVIMA (03) (1)	590 Secs (2360 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***

Orbit Structure



Visit

Proposal 16846, V1_UVIMA (04), completed Wed Apr 13 15:00:38 GMT 2022

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: ON HOLD ; TOO RESPONSE TIME 5.0D

On Hold Comments: Waiting for trigger

Diagnostics

(Exposure 1 (Pattern 1, Exps 1-1 in V1_UVIMA (04))) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	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

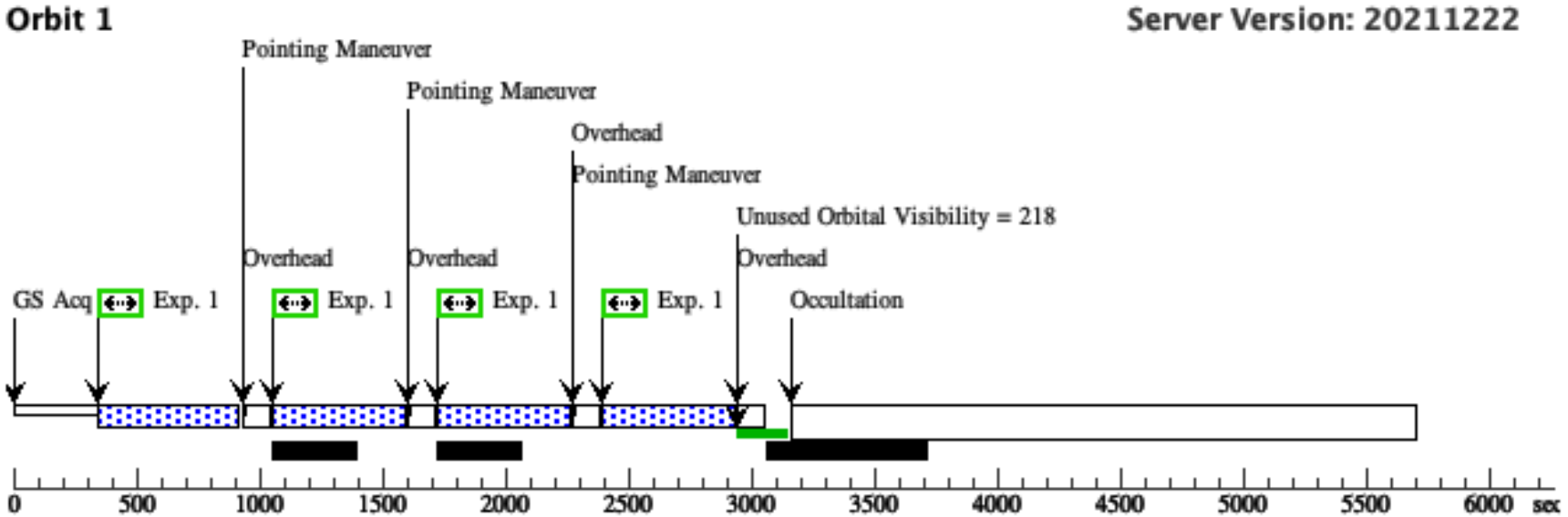
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	GRB211211A	RA: 14 09 10.0900 (212.2920417d) Dec: +27 53 18.23 (27.88840d) Equinox: J2000		V=28	Reference Frame: XRT

Comments:
Category=STAR
Description=[GAMMA RAY BURSTER]
Extended=NO

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(2) GRB211211A	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO; FLASH=3		Pattern 1, Exps 1-1 in V1_UVIMA (04) (1)	540 Secs (2160 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***

Orbit Structure



Visit

Proposal 16846, V1_UVIR (05), completed Wed Apr 13 15:00:38 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ON HOLD ; TOO RESPONSE TIME 5.0D

On Hold Comments: Awaiting for trigger

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	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

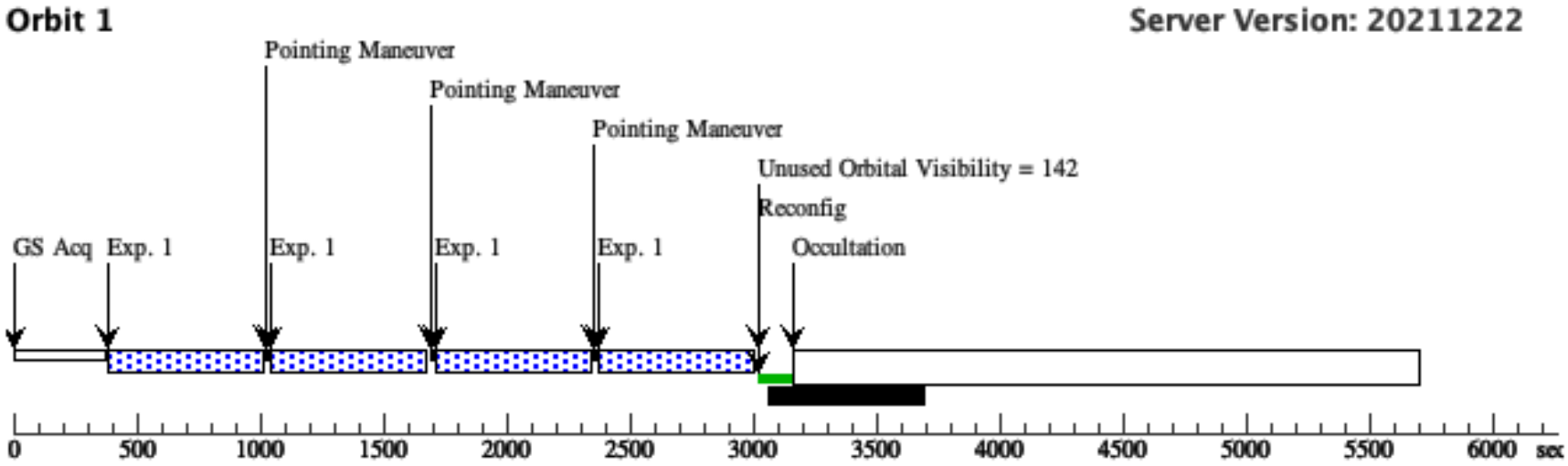
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	GRB211211A	RA: 14 09 10.0900 (212.2920417d) Dec: +27 53 18.23 (27.88840d) Equinox: J2000		V=28	Reference Frame: XRT

Comments:
Category=STAR
Description=[GAMMA RAY BURSTER]
Extended=NO

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(2) GRB211211A	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=7; SAMP-SEQ=SPARS100		Pattern 2, Exps 1-1 in V1_UVIR (05) (2)	602.934229 Secs (2411.737 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	*[1]*

Orbit Structure



Visit

Proposal 16846, V1_UVIR (06), implementation Wed Apr 13 15:00:38 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ON HOLD ; TOO RESPONSE TIME 3.0D

On Hold Comments: ToO

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	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

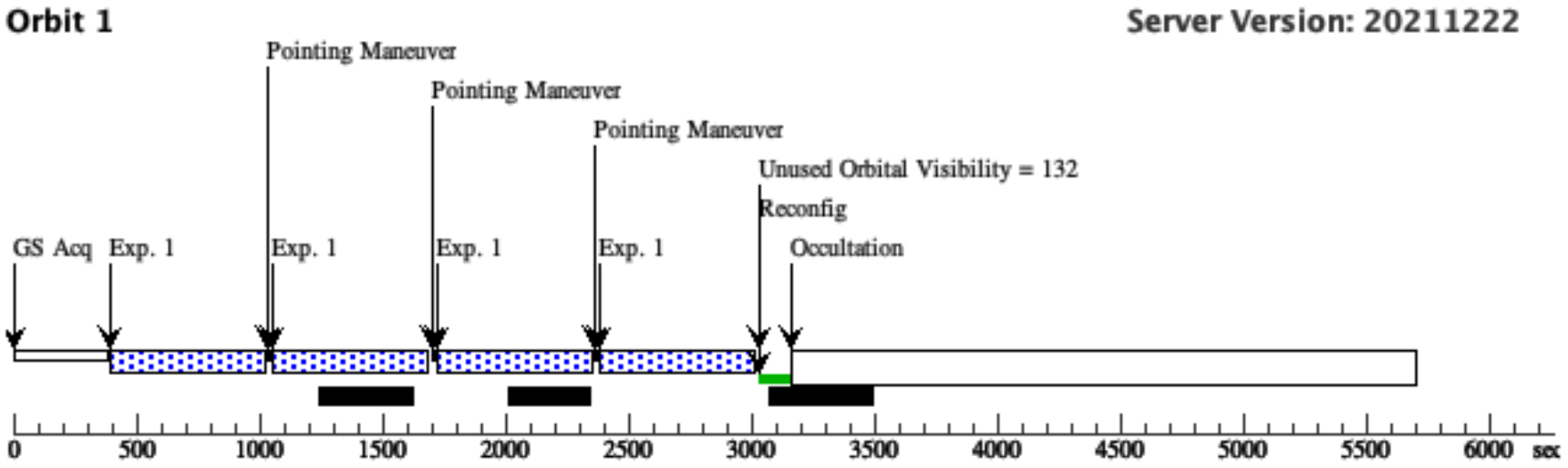
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	GRB211211A	RA: 14 09 10.0900 (212.2920417d) Dec: +27 53 18.23 (27.88840d) Equinox: J2000		V=28	Reference Frame: XRT

Comments:
Category=STAR
Description=[GAMMA RAY BURSTER]
Extended=NO

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(2) GRB211211A	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=13; SAMP-SEQ=SPARS50	GS ACQ SCENARIO BASE1BE	Pattern 2, Exps 1-1 in V1_UVIR (06) (2)	602.937703 Secs (2411.751 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	*[1]*

Orbit Structure



Visit

Proposal 16846, V2_IRSPEC1 (07), implementation Wed Apr 13 15:00:38 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: SAME ORIENT AS 01; ON HOLD ; TOO RESPONSE TIME 3.0D

On Hold Comments: Awaiting for trigger

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(3)	Pattern Type=WFC3-IR-DITHER-LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=1.56 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false		(1)
(4)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.605 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false		(2)

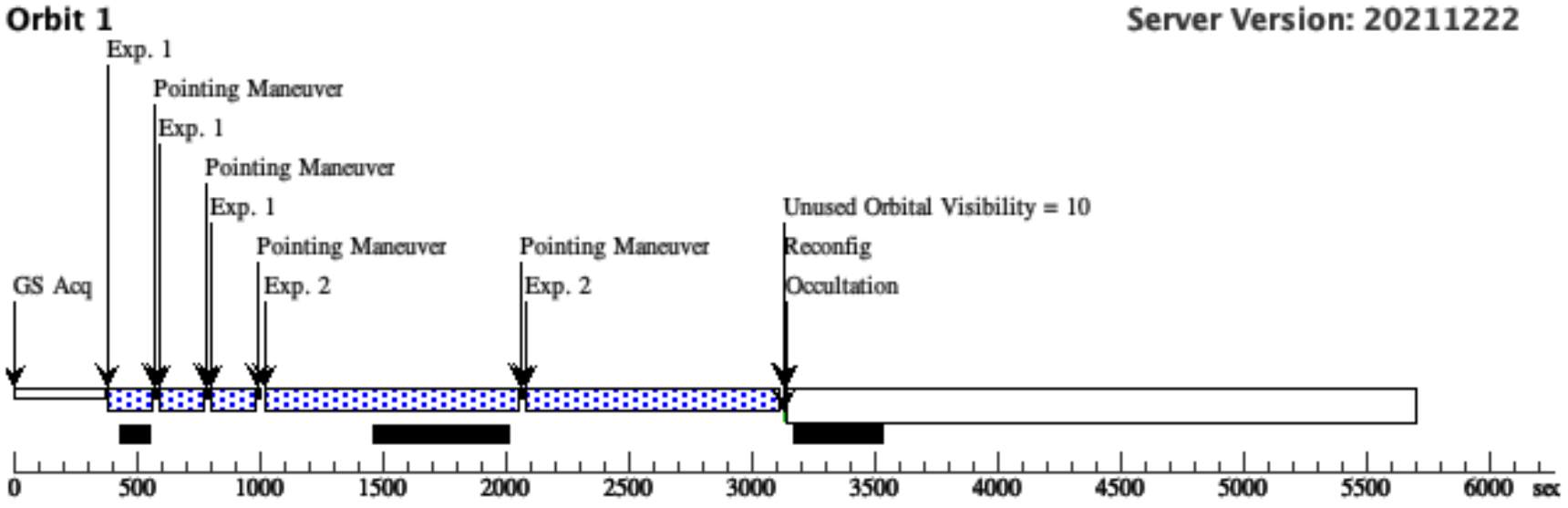
Generic Targets

#	Name	Criteria	Description
(1)	KILONOVA	Redshift z<0.4	EJECTA NEUTRON STAR

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) KILONOVA	WFC3/IR, MULTIACCUM, GRISM1024	F105W	NSAMP=8; SAMP-SEQ=STEP50		Pattern 3, Exps 1-1 in V2_IRSPEC1 (07) (3)	149.231128 Secs (447.693 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	 ***[1]***
2		(1) KILONOVA	WFC3/IR, MULTIACCUM, GRISM1024	G102	NSAMP=11; SAMP-SEQ=SPARS100		Pattern 4, Exps 2-2 in V2_IRSPEC1 (07) (4)	1002.935521 Secs (2005.871 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***

Orbit Structure



Visit

Proposal 16846, V2_IRSPEC2 (08), implementation Wed Apr 13 15:00:38 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: SAME ORIENT AS 02; ON HOLD ; TOO RESPONSE TIME 3.0D

On Hold Comments: Awaiting for trigger

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(3)	Pattern Type=WFC3-IR-DITHER-LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=1.56 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false		(1)
(4)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.605 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false		(2)

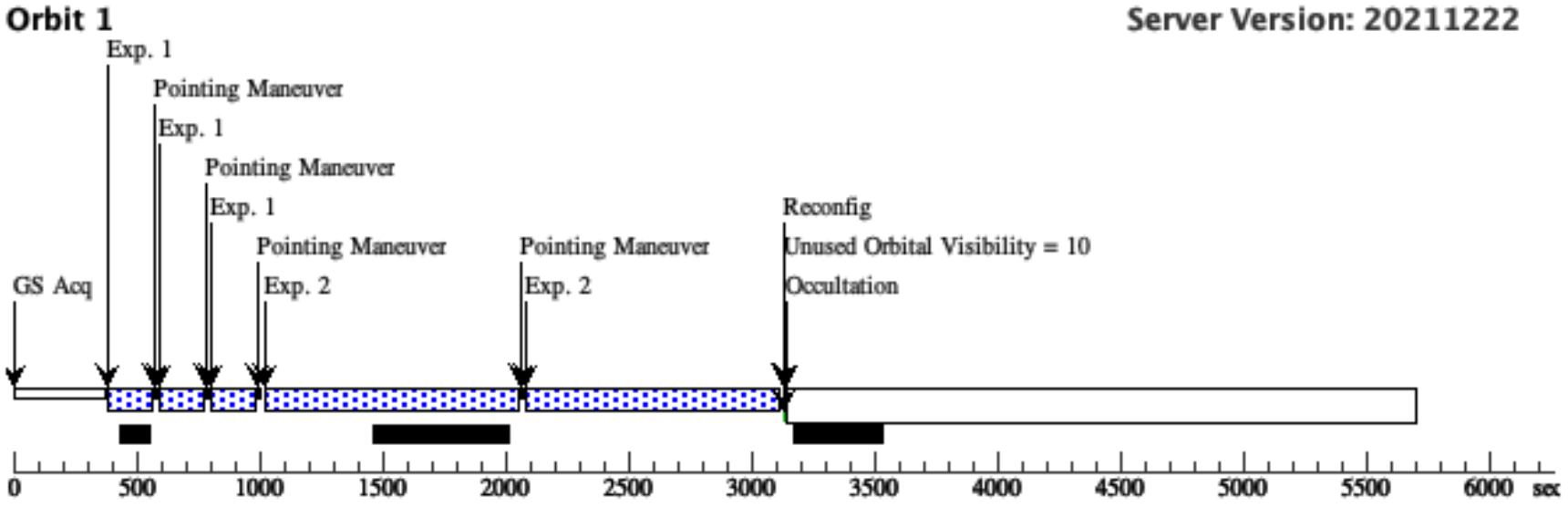
Generic Targets

#	Name	Criteria	Description
(1)	KILONOVA	Redshift z<0.4	EJECTA NEUTRON STAR

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) KILONOVA	WFC3/IR, MULTIACCUM, GRISM1024	F140W	NSAMP=8; SAMP-SEQ=STEP50		Pattern 3, Exps 1-1 in V2_IRSPEC2 (08) (3)	149.231128 Secs (447.693 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	 ***[1]***
2		(1) KILONOVA	WFC3/IR, MULTIACCUM, GRISM1024	G141	NSAMP=11; SAMP-SEQ=SPARS100		Pattern 4, Exps 2-2 in V2_IRSPEC2 (08) (4)	1002.935521 Secs (2005.871 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***

Orbit Structure



Visit

Proposal 16846, V2_UVIMA (09), implementation Wed Apr 13 15:00:38 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: ON HOLD ; TOO RESPONSE TIME 3.0D

On Hold Comments: Awaiting for trigger

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	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)

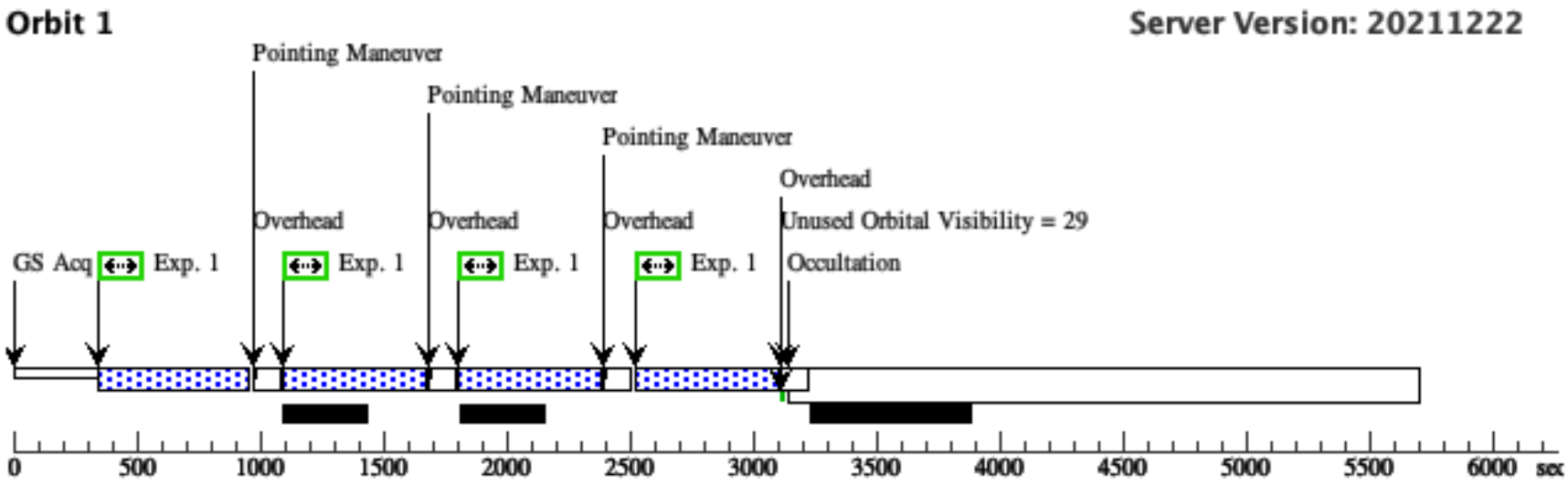
Generic Targets

#	Name	Criteria	Description
(1)	KILONOVA	Redshift z<0.4	EJECTA NEUTRON STAR

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) KILONOVA	WFC3/UVIS, ACCUM, UVIS	F475W	CR-SPLIT=NO; FLASH=8		Pattern 1, Exps 1-1 in V2_UVIMA (09) (1)	580 Secs (2320 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	*[1]*

Orbit Structure



Visit

Proposal 16846, V2_UVIR (10), implementation Wed Apr 13 15:00:38 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ON HOLD ; TOO RESPONSE TIME 3.0D

On Hold Comments: Awaiting for trigger

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(3)	Pattern Type=WFC3-IR-DITHER-LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=1.56 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false		(1), (2), (3)

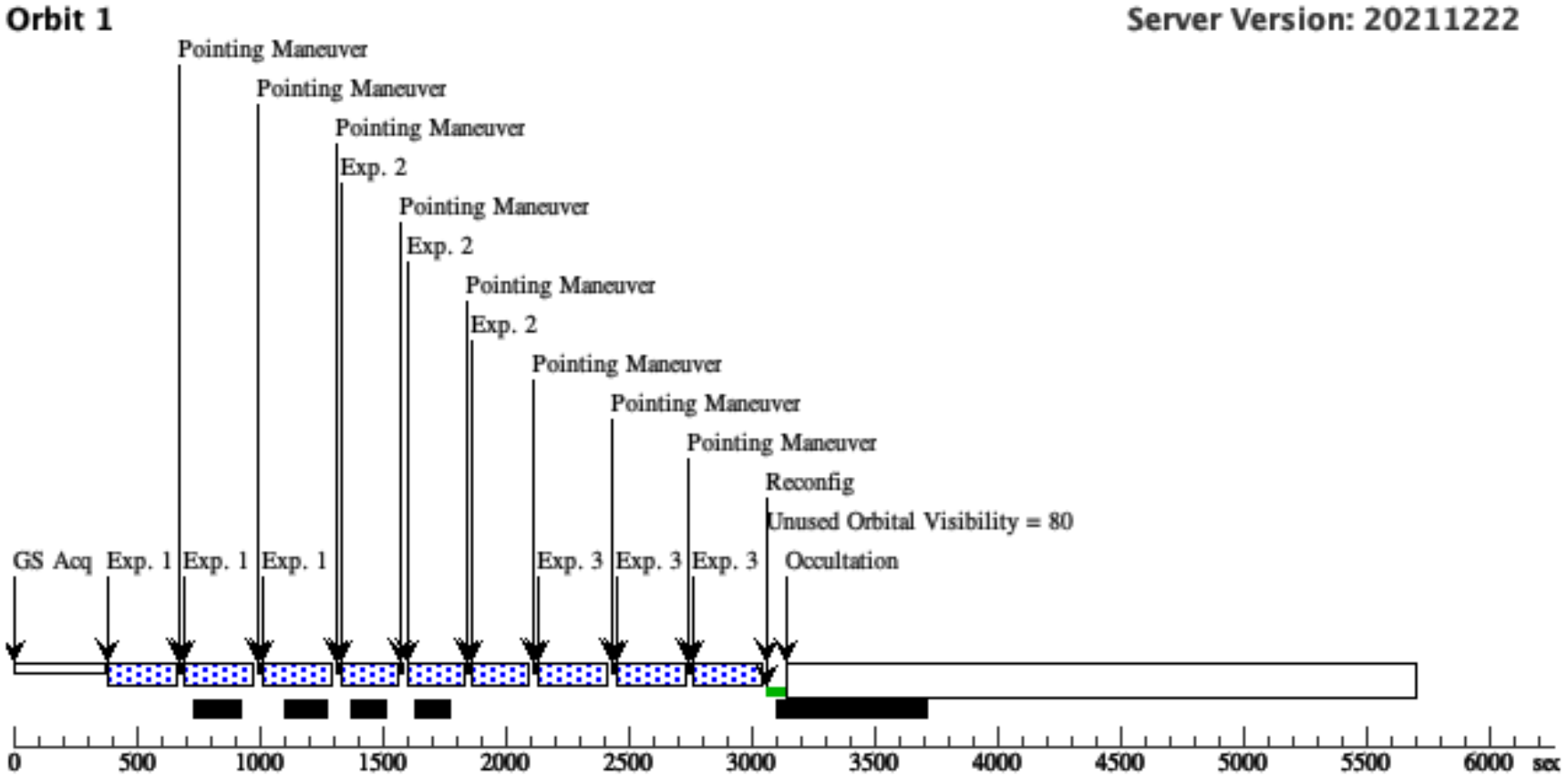
Generic Targets

#	Name	Criteria	Description
(1)	KILONOVA	Redshift z<0.4	EJECTA NEUTRON STAR

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) KILONOVA	WFC3/IR, MULTIACCUM, IR	F105W	NSAMP=6; SAMP-SEQ=SPARS50		Pattern 3, Exps 1-1 in V2_UVIR (10) (3)	252.934546 Secs (758.804 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	 ***[1]***
2		(1) KILONOVA	WFC3/IR, MULTIACCUM, IR	F125W	NSAMP=5; SAMP-SEQ=SPARS50		Pattern 3, Exps 2-2 in V2_UVIR (10) (3)	202.934095 Secs (608.802 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	 ***[1]***
3		(1) KILONOVA	WFC3/IR, MULTIACCUM, IR	F140W	NSAMP=6; SAMP-SEQ=SPARS50		Pattern 3, Exps 3-3 in V2_UVIR (10) (3)	252.934546 Secs (758.804 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	 ***[1]***

Orbit Structure



Visit

Proposal 16846, V2_UVIR (11), implementation Wed Apr 13 15:00:38 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ON HOLD ; TOO RESPONSE TIME 3.0D

On Hold Comments: Awaiting for trigger

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	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)

Generic Targets

#	Name	Criteria	Description
(1)	KILONOVA	Redshift z<0.4	EJECTA NEUTRON STAR

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) KILONOVA	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=6; SAMP-SEQ=SPARS50		Pattern 2, Exps 1-1 in V2_UVIR (11) (2)	252.934546 Secs (1011.738 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	 ***[1]***
2		(1) KILONOVA	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=7; SAMP-SEQ=SPARS50		Pattern 2, Exps 2-2 in V2_UVIR (11) (2)	302.934997 Secs (1211.74 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	 ***[1]***

Orbit Structure