



14771 - r-process kilonovae, short-duration GRBs, and EM counterparts to gravitational wave sources

Cycle: 24, 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>
W1	(2) GRB170817A	WFC3/IR	1	21-Jun-2018 20:00:21.0	yes
W2	(2) GRB170817A	WFC3/IR	1	21-Jun-2018 20:00:22.0	yes
F1	(2) GRB170817A	WFC3/UVIS	1	21-Jun-2018 20:00:23.0	yes
L1	(2) GRB170817A	WFC3/UVIS	2	21-Jun-2018 20:00:23.0	yes

<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>
L3	(2) GRB170817A	WFC3/UVIS	2	21-Jun-2018 20:00:24.0	yes
L2	(2) GRB170817A	WFC3/UVIS	2	21-Jun-2018 20:00:25.0	yes
F2	(2) GRB170817A	WFC3/UVIS	1	21-Jun-2018 20:00:26.0	yes
F3	(2) GRB170817A	WFC3/UVIS	1	21-Jun-2018 20:00:27.0	yes
A1	(2) GRB170817A	WFC3/IR	1	21-Jun-2018 20:00:28.0	yes
A2	(2) GRB170817A	WFC3/IR	1	21-Jun-2018 20:00:29.0	yes
A3	(3) GRB170817A-NGC4993	WFC3/UVIS	1	21-Jun-2018 20:00:30.0	yes

14 Total Orbits Used

ABSTRACT

Our HST observations of the short-duration gamma-ray burst GRB130603B showed an infrared excess, about a week (rest-frame) after the burst, consistent with expectations from models of an emerging 'kilonova' (aka. 'macronova') driven by the radioactive decay of newly-synthesised r-process elements. This directly supports the compact object merger hypothesis for short-duration GRBs, in which dynamically ejected neutron star material powers a radioactive transient. If confirmed in future events, this discovery also provides empirical evidence for a quasi-isotropic, electromagnetic signature of a prime target for gravitational wave (GW) detection by aLIGO/AdV, and suggests that kilonovae of this sort are likely sites of substantial (perhaps dominant) production of r-process elements in the universe. However, the ubiquity and range of behaviour of these events is entirely unknown; the kilonova luminosity is expected to depend on the ejecta mass and velocity, and also may be enhanced by ongoing energy input from the compact remnant. We need to establish their properties to inform searches of GW error boxes and quantify their contribution to the heavy element nucleosynthesis budget. Suitable SGRBs targets are rare, so intensive follow-up of any that occur is critical. Here we propose ToO observations (continuing our c23 campaign) of a low-redshift ($z \sim 0.35$) SGRB localised during cycle 24 to search for and characterise more fully any accompanying kilonova signal.

OBSERVING DESCRIPTION

The aim of this proposal is to search for and characterise the nature of r-process kilonova in the afterglows of short duration GRBs. To do this we wish to search for IR re-brightenings indicative of heavily absorbed r-process production. Such a search requires that the source reddens and then rebrightens in the IR.

Since these objects remain poorly studied (only a single example with little coverage) we have specified a range of observations. The choice of which observation to trigger will be based on the redshift of the burst (in particular to distinguish observations where grism observations are possible), any knowledge of the burst location within the host galaxy, foreground extinction etc. In general we will trigger two IR and one optical observation for monitoring. We have specified two sets of observations so that observations can be repeated later for subtraction of the light.

Below we list the observations that have been specified. Please note that this is a superset of those we will actually perform, and that our total useage will not exceed 12 orbits.

Note: That in our formal phase I proposal we did ask for the filters below, although not all were included in the dummy observations at the front of phase 1.

Visit G1/H1: 1 orbit G102

Visit G2:/H2 1 orbit G141

Visit G3/H3: 2 orbit G102

Visit G4/H4: 2 orbit G141

Visit I1/J1: 1 orbit, split F105W, F140W

Visit I2/J2: 1 orbit, split F105W, F160W

Visit I3/J3: 2 orbits F105W

Visit I4/J4: 2 orbits F125W

Visit I5/J5: 2 orbits F140W

Visit I6/J6: 2 orbits F160W

Visit I7/J7: 2 orbits F110W

Visit I8/J8: 1 orbit F105W

Visit I9/J9: 1 orbit F125W

Visit IA/JA: 1 orbit F140W

Visit IB/JB: 1 orbit F160W

Proposal 14771 (STScI Edit Number: 2, Created: Thursday, June 21, 2018 7:00:31 PM EST) - Overview

Visit IC/J1C: 1 orbit F110W

Visit O1/P1: 1 orbit F475W

Visit O2/P2: 1 orbit F606W

Visit O3/P3: 1 orbit F814W

Visit O4/P4: 1 orbit F850LP

Visit C1/D1: 2 orbits: F606W, F105W, F160W

Proposal 14771 - Visit W1 - r-process kilonovae, short-duration GRBs, and EM counterparts to gravitational wave sources

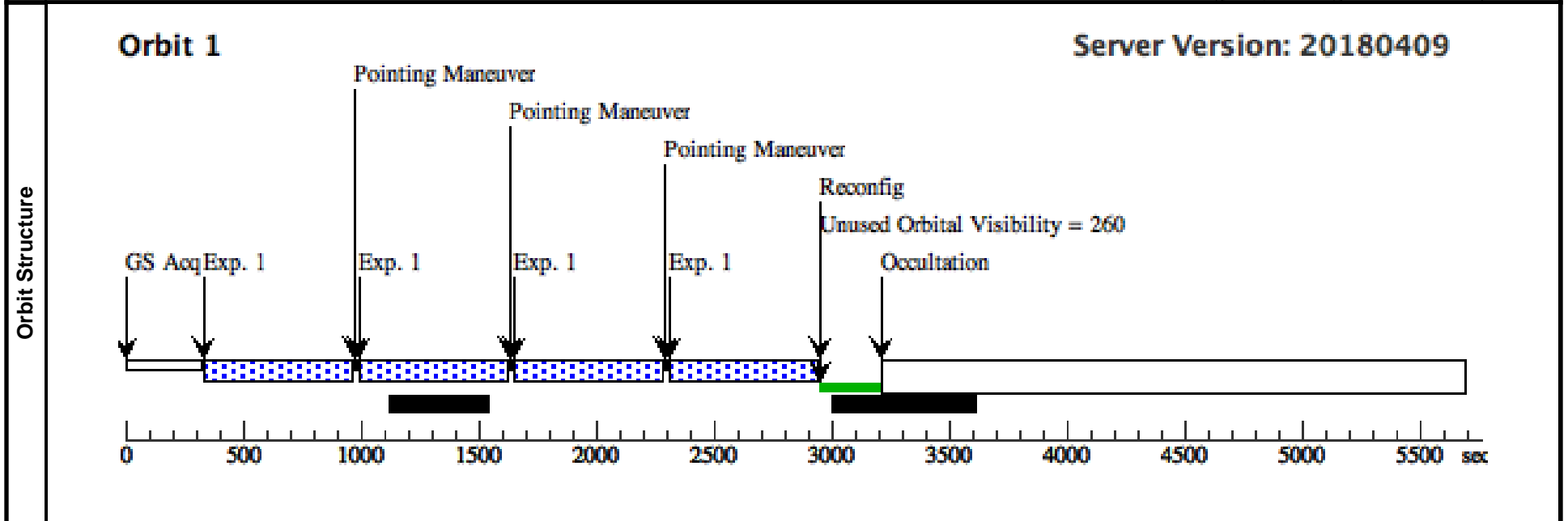
Fri Jun 22 00:00:31 GMT 2018

Visit	Proposal 14771, Visit W1, completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: BEFORE 12-DEC-2017:00:00:00; ON HOLD <i>On Hold Comments: Awaiting SGRB trigger</i>		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	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)	GRB170817A	RA: 13 09 48.0800 (197.4503333d) Dec: -23 22 53.20 (-23.38144d) Equinox: J2000		V=16+/-1	Reference Frame: ICRS
	<i>Comments:</i> Category=GALAXY Description=[UNDESIGNATED]					

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(2) GRB170817A	WFC3/IR, MULTIACCUM, IR	F140W	SAMP-SEQ=STEP100; NSAMP=12		Pattern 1, Exps 1-1 in Visit W1 (1)	599.232292 Secs (2396.929 Secs)	[1]
									[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	



Proposal 14771 - Visit W2 - r-process kilonovae, short-duration GRBs, and EM counterparts to gravitational wave sources

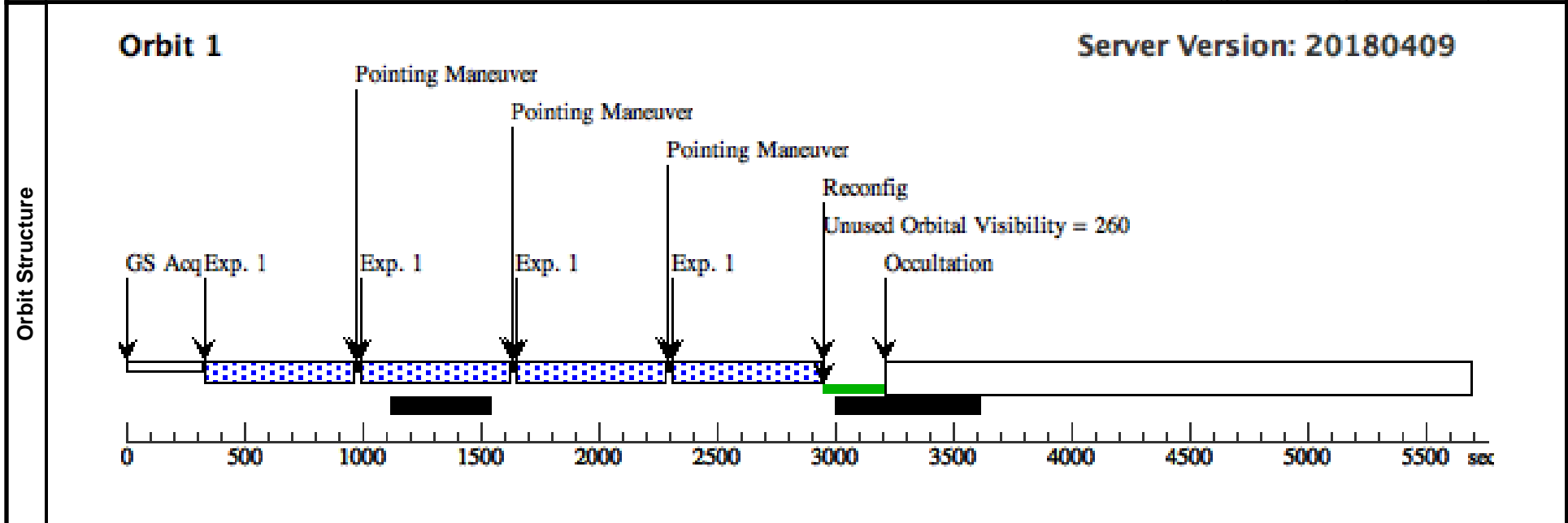
Fri Jun 22 00:00:32 GMT 2018

Visit	Proposal 14771, Visit W2, completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: BEFORE 12-DEC-2017:00:00:00; ON HOLD <i>On Hold Comments: Awaiting SGRB trigger</i>		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	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)	GRB170817A	RA: 13 09 48.0800 (197.4503333d) Dec: -23 22 53.20 (-23.38144d) Equinox: J2000		V=16+/-1	Reference Frame: ICRS
	<i>Comments:</i> Category=GALAXY Description=[UNDESIGNATED]					

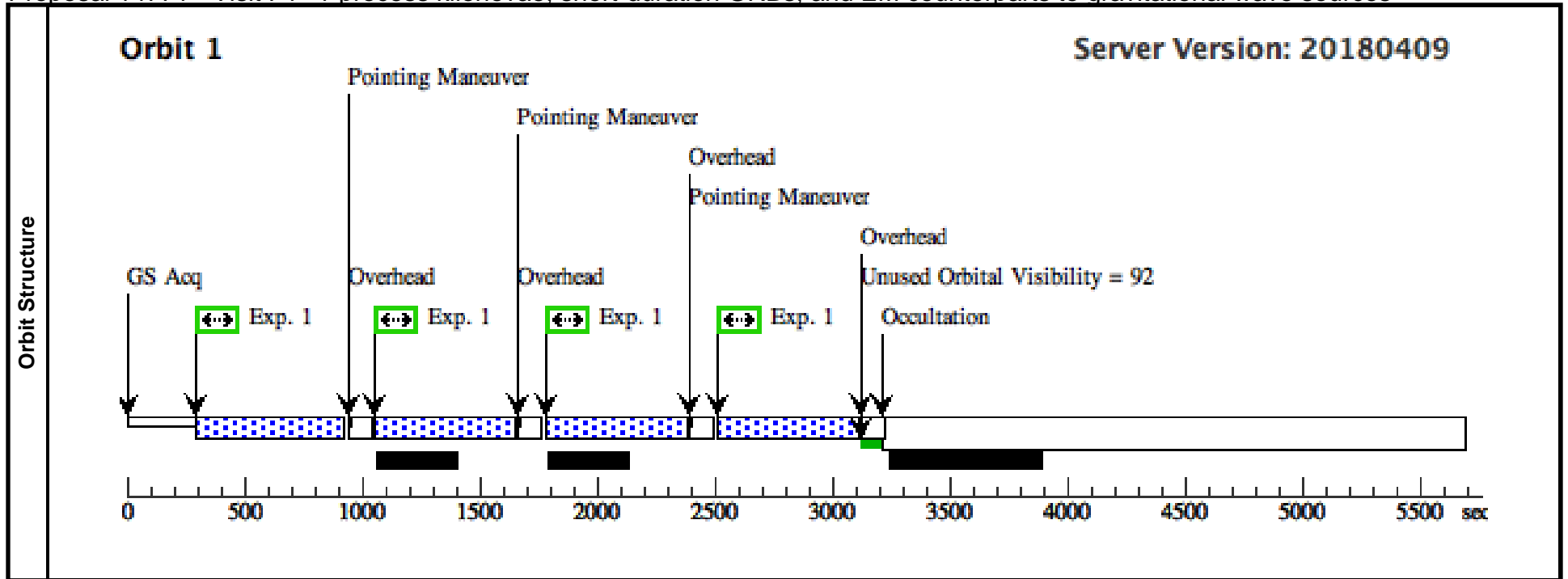
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(2) GRB170817A	WFC3/IR, MULTIACCUM, IR	F140W	SAMP-SEQ=STEP100; NSAMP=12		Pattern 1, Exps 1-1 in Visit W2 (1)	599.232292 Secs (2396.929 Secs)	[1]
									[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	



Proposal 14771 - Visit F1 - r-process kilonovae, short-duration GRBs, and EM counterparts to gravitational wave sources

Fri Jun 22 00:00:32 GMT 2018

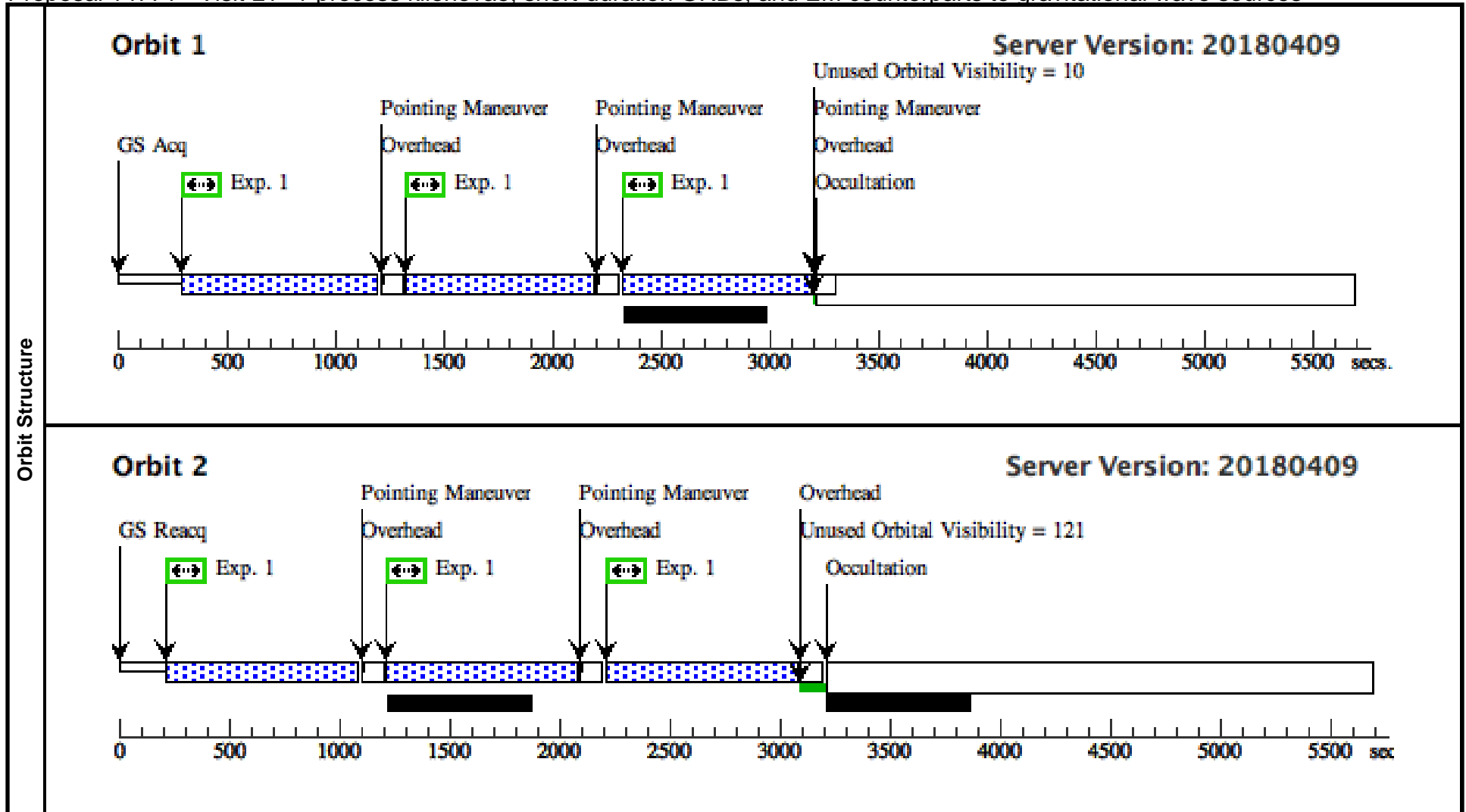
Visit	Proposal 14771, Visit F1, completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: BEFORE 12-DEC-2017:00:00:00; ON HOLD <i>On Hold Comments: Awaiting SGRB trigger</i>										
	Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
(3)		Pattern 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)	GRB170817A	RA: 13 09 48.0800 (197.4503333d) Dec: -23 22 53.20 (-23.38144d) Equinox: J2000				V=16+/-1		Reference Frame: ICRS		
<i>Comments:</i> Category=GALAXY Description=[UNDESIGNATED]											
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1		(2) GRB170817A	WFC3/UVIS, ACCUM, UVIS2	F814W			Pattern 3, Exps 1-1 in Visit F1 (3)	600 Secs (2400 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]		[1]



Proposal 14771 - Visit L1 - r-process kilonovae, short-duration GRBs, and EM counterparts to gravitational wave sources

Fri Jun 22 00:00:32 GMT 2018

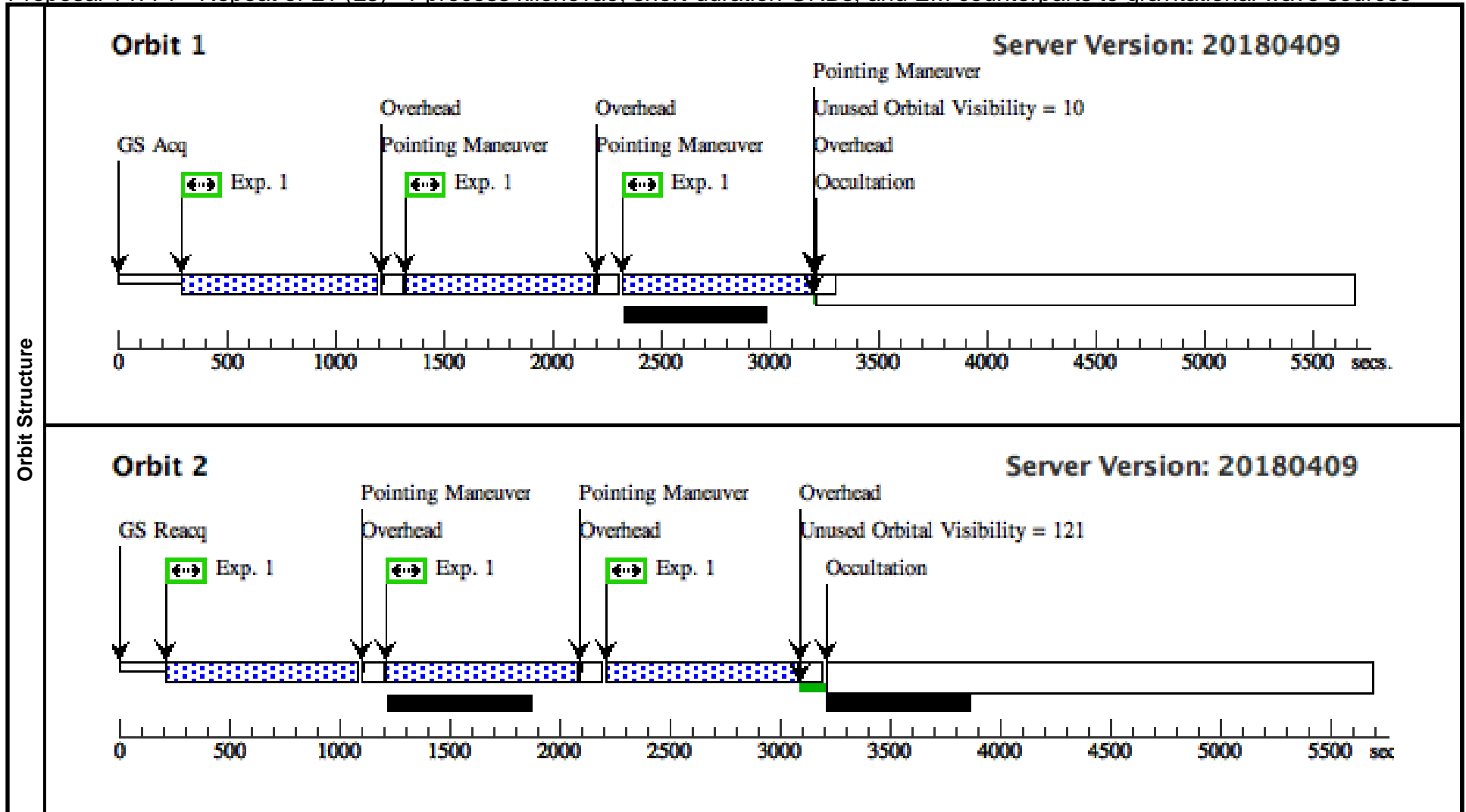
Visit	Proposal 14771, Visit L1, failed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: BEFORE 12-JUN-2018:00:00:00; ON HOLD <i>On Hold Comments: Awaiting SGRB trigger</i>									
	Patterns	#	Primary Pattern				Secondary Pattern			
(6)		Pattern Type=LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false	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)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(2)	GRB170817A	RA: 13 09 48.0800 (197.4503333d) Dec: -23 22 53.20 (-23.38144d) Equinox: J2000		V=16+/-1	Reference Frame: ICRS				
<i>Comments:</i> Category=GALAXY Description=[UNDESIGNATED]										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(2) GRB170817A	WFC3/UVIS, ACCUM, UVIS2	F814W				Pattern 6, Exps 1-1 in Visit L1 (6)	870 Secs (5220 Secs)	
									[==>(Pattern 1,1)] [==>(Pattern 1,2)] [==>(Pattern 2,1)]	[1]
								[==>(Pattern 2,2)] [==>(Pattern 3,1)] [==>(Pattern 3,2)]	[2]	



Proposal 14771 - Repeat of L1 (L3) - r-process kilonovae, short-duration GRBs, and EM counterparts to gravitational wave sources

Fri Jun 22 00:00:32 GMT 2018

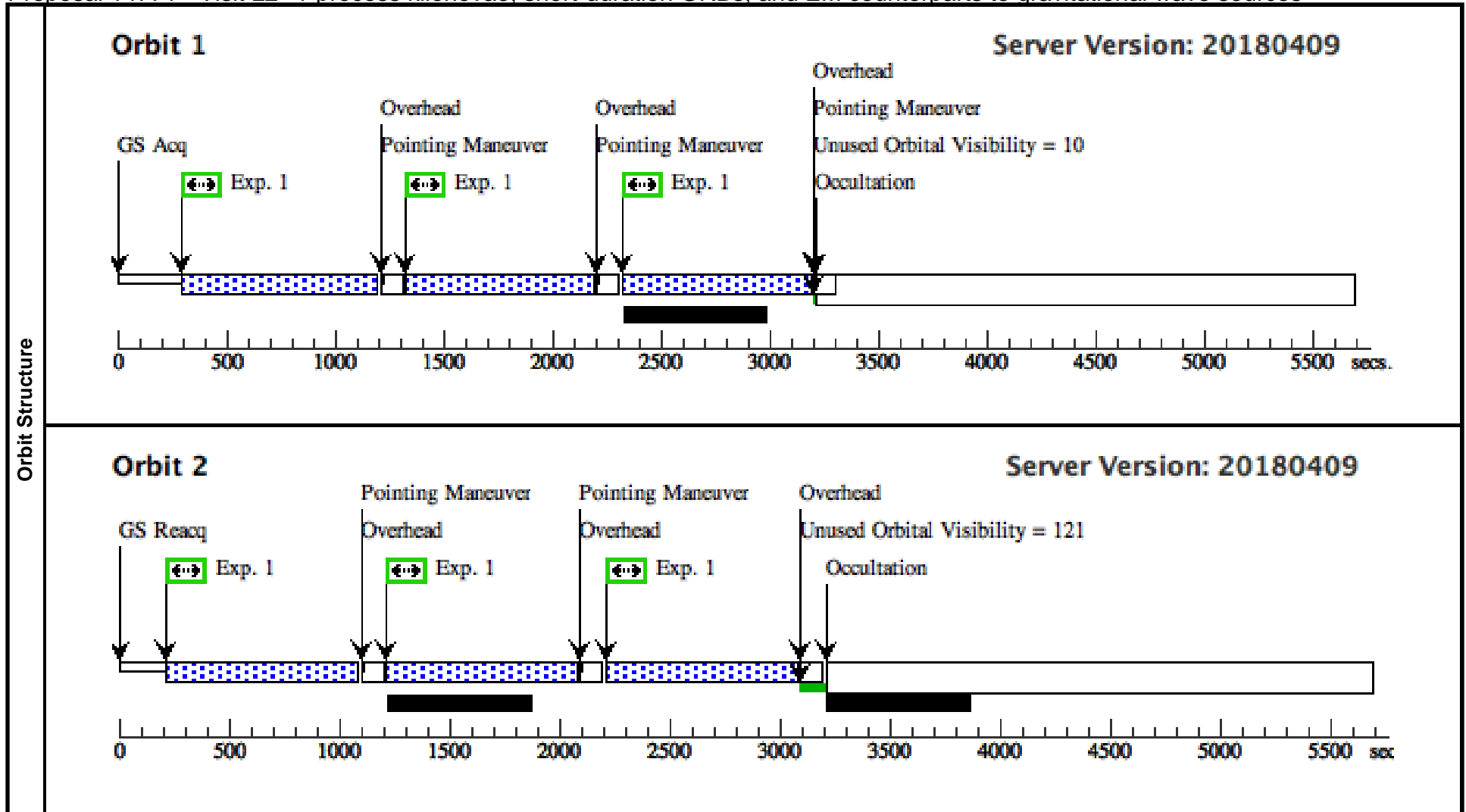
Visit	Proposal 14771, Repeat of L1 (L3) Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: ON HOLD <i>Comments: This visit is a repeat of visit L1, requested to be executed near to program 15482</i> <i>On Hold Comments: Awaiting SGRB trigger</i>									
	Patterns	#	Primary Pattern			Secondary Pattern			Exposures	
(6)		Pattern Type=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=false		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)		
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections		Fluxes	Miscellaneous			
	(2)	GRB170817A	RA: 13 09 48.0800 (197.4503333d) Dec: -23 22 53.20 (-23.38144d) Equinox: J2000			V=16+/-1	Reference Frame: ICRS			
<i>Comments:</i> Category=GALAXY Description=[UNDESIGNATED]										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(2) GRB170817A	WFC3/UVIS, ACCUM, UVIS2	F814W			Pattern 6, Exps 1-1 in Repeat of L1 (L3) (6)	870 Secs (5220 Secs)	
									[==>(Pattern 1,1)] [==>(Pattern 1,2)] [==>(Pattern 2,1)]	[1]
								[==>(Pattern 2,2)] [==>(Pattern 3,1)] [==>(Pattern 3,2)]	[2]	



Proposal 14771 - Visit L2 - r-process kilonovae, short-duration GRBs, and EM counterparts to gravitational wave sources

Fri Jun 22 00:00:32 GMT 2018

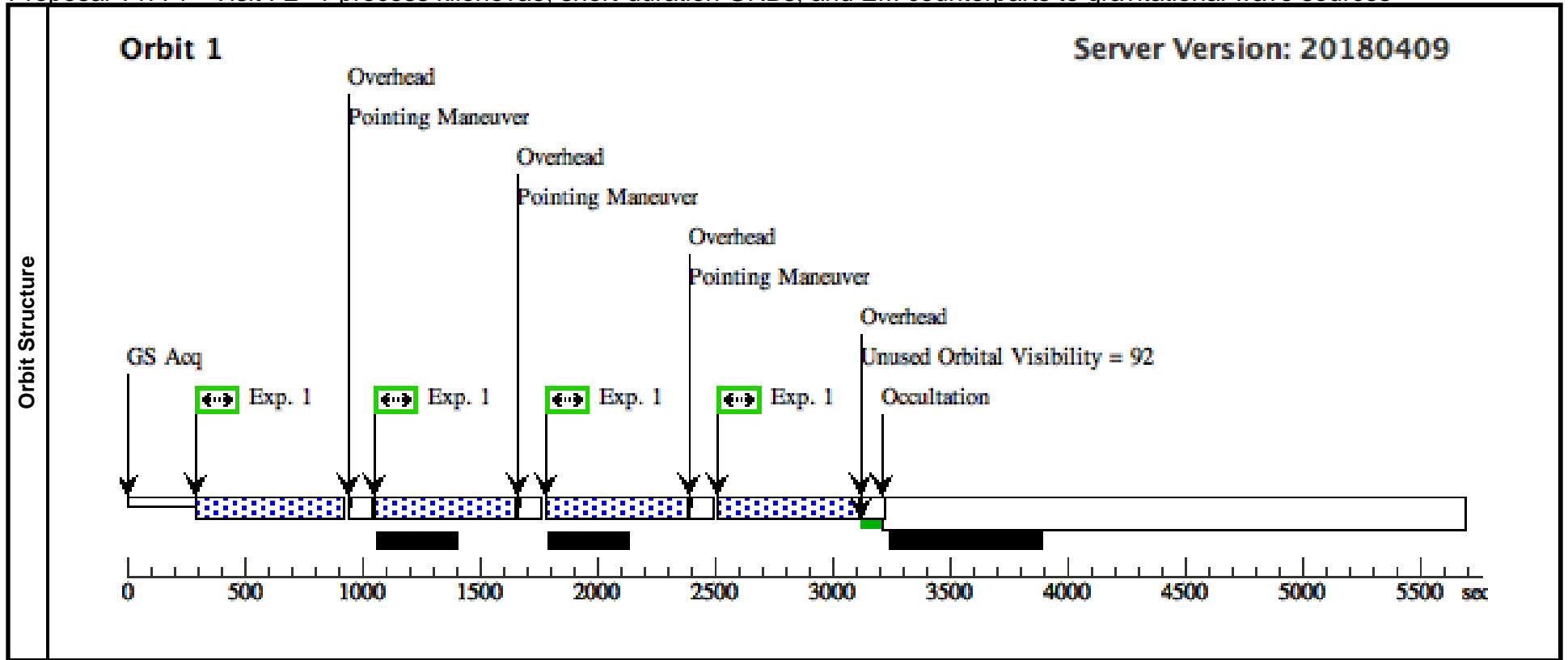
Visit	Proposal 14771, Visit L2, completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: BEFORE 12-JUN-2018:00:00:00; ON HOLD <i>On Hold Comments: Awaiting SGRB trigger</i>									
	Patterns	#	Primary Pattern				Secondary Pattern			
(6)		Pattern Type=LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false	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)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(2)	GRB170817A	RA: 13 09 48.0800 (197.4503333d) Dec: -23 22 53.20 (-23.38144d) Equinox: J2000		V=16+/-1	Reference Frame: ICRS				
	<i>Comments:</i> Category=GALAXY Description=[UNDESIGNATED]									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(2) GRB170817A		WFC3/UVIS, ACCUM, UVIS2	F606W			Pattern 6, Exps 1-1 in Visit L2 (6)	870 Secs (5220 Secs)	
									[==>(Pattern 1,1)] [==>(Pattern 1,2)] [==>(Pattern 2,1)]	[1]
								[==>(Pattern 2,2)] [==>(Pattern 3,1)] [==>(Pattern 3,2)]	[2]	



Proposal 14771 - Visit F2 - r-process kilonovae, short-duration GRBs, and EM counterparts to gravitational wave sources

Fri Jun 22 00:00:32 GMT 2018

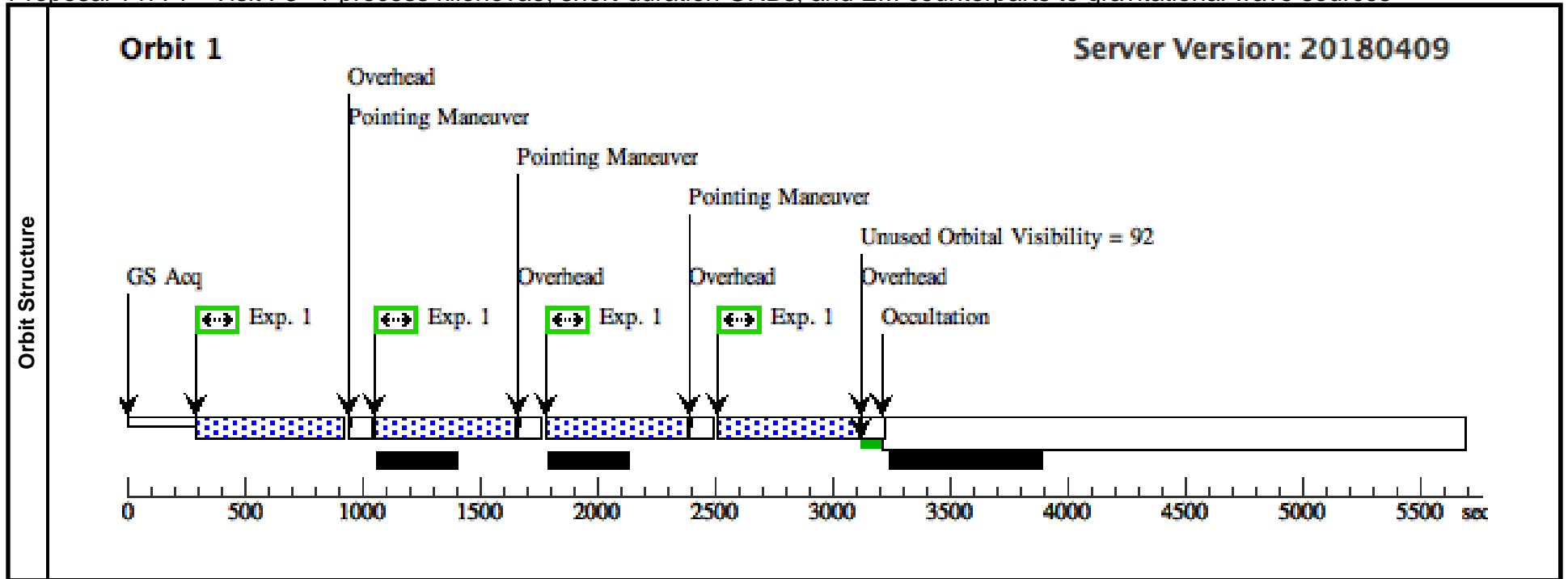
Visit	Proposal 14771, Visit F2, completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: BETWEEN 20-JAN-2018:00:00:00 AND 15-FEB-2018:00:00:00; ON HOLD <i>On Hold Comments: Awaiting SGRB trigger</i>										
	Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
(3)		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)	GRB170817A	RA: 13 09 48.0800 (197.4503333d) Dec: -23 22 53.20 (-23.38144d) Equinox: J2000			V=16+/-1	Reference Frame: ICRS				
<i>Comments:</i> Category=GALAXY Description=[UNDESIGNATED]											
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1		(2) GRB170817A	WFC3/UVIS, ACCUM, UVIS2	F814W			Pattern 3, Exps 1-1 in Visit F2 (3)	600 Secs (2400 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]		[1]



Proposal 14771 - Visit F3 - r-process kilonovae, short-duration GRBs, and EM counterparts to gravitational wave sources

Fri Jun 22 00:00:32 GMT 2018

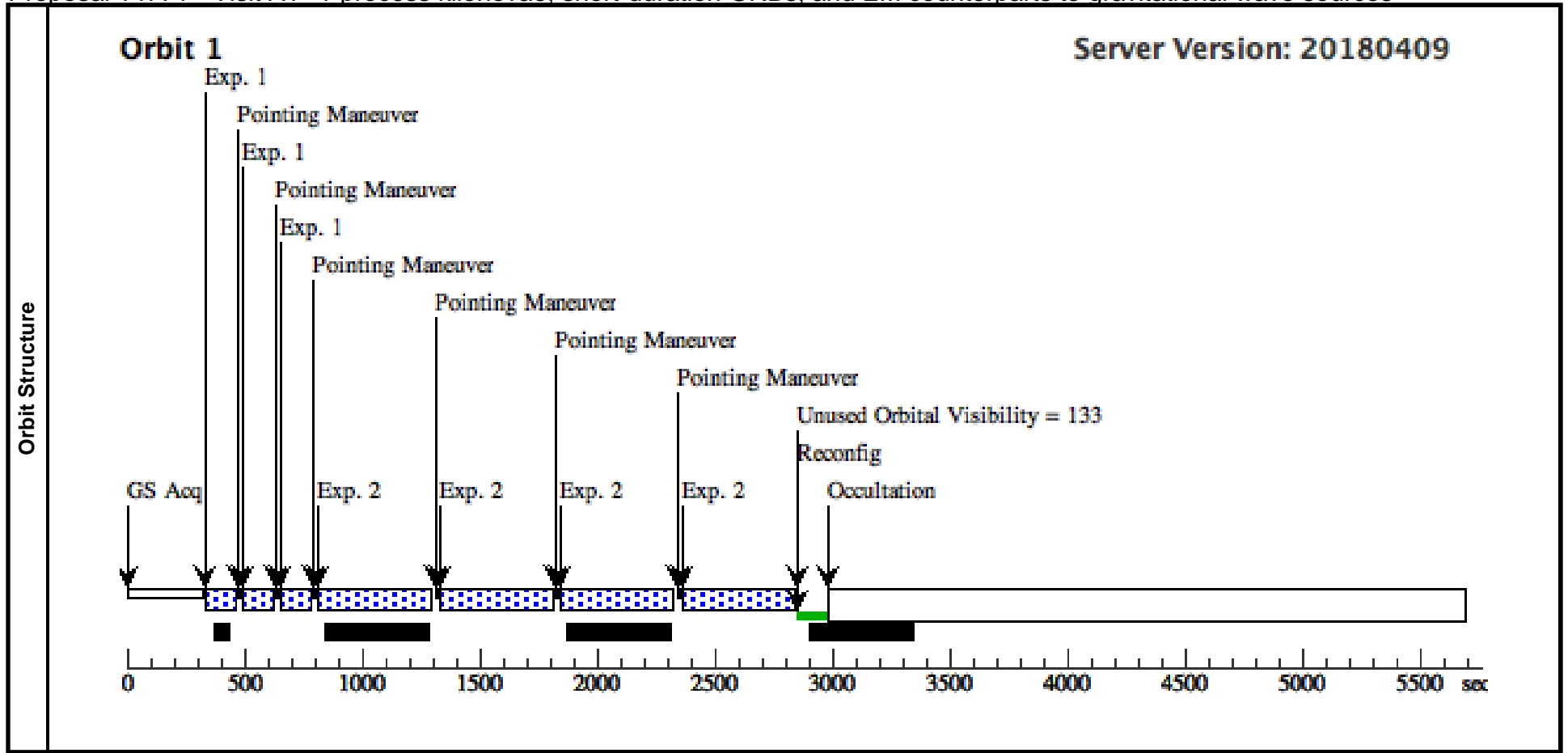
Visit	Proposal 14771, Visit F3, completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: BETWEEN 20-JAN-2018:00:00:00 AND 15-FEB-2018:00:00:00; ON HOLD <i>On Hold Comments: Awaiting SGRB trigger</i>										
	Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
(3)		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)	GRB170817A	RA: 13 09 48.0800 (197.4503333d) Dec: -23 22 53.20 (-23.38144d) Equinox: J2000			V=16+/-1	Reference Frame: ICRS				
<i>Comments:</i> Category=GALAXY Description=[UNDESIGNATED]											
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1		(2) GRB170817A	WFC3/UVIS, ACCUM, UVIS2	F606W			Pattern 3, Exps 1-1 in Visit F3 (3)	600 Secs (2400 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]		[1]



Proposal 14771 - Visit A1 - r-process kilonovae, short-duration GRBs, and EM counterparts to gravitational wave sources

Fri Jun 22 00:00:32 GMT 2018

Visit	Proposal 14771, Visit A1, completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: SCHED 100%; ORIENT 125D TO 135 D; BETWEEN 27-AUG-2017:00:00:00 AND 30-AUG-2017:00:00:00 Comments: Ideally we would like this visit to be set at the same orient as visit G1 of GO 12804									
	#	Primary Pattern	Secondary Pattern	Exposures						
Patterns	(1)	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)						
	(5)	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				
	(2)	GRB170817A	RA: 13 09 48.0800 (197.4503333d) Dec: -23 22 53.20 (-23.38144d) Equinox: J2000		V=16+/-1	Reference Frame: ICRS				
Comments: Category=GALAXY Description=[UNDESIGNATED]										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(2) GRB170817A	WFC3/IR, MULTIACCUM, GRISM1024	F110W	NSAMP=7; SAMP-SEQ=STEP50			Pattern 5, Exps 1-1 in Visit A1 (5)	99.230677 Secs (297.692 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]
2		(2) GRB170817A	WFC3/IR, MULTIACCUM, GRISM1024	G102		NSAMP=10; SAMP-SEQ=SPARS50		Pattern 1, Exps 2-2 in Visit A1 (1)	452.93635 Secs (1811.745 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]



Proposal 14771 - Visit A2 - r-process kilonovae, short-duration GRBs, and EM counterparts to gravitational wave sources

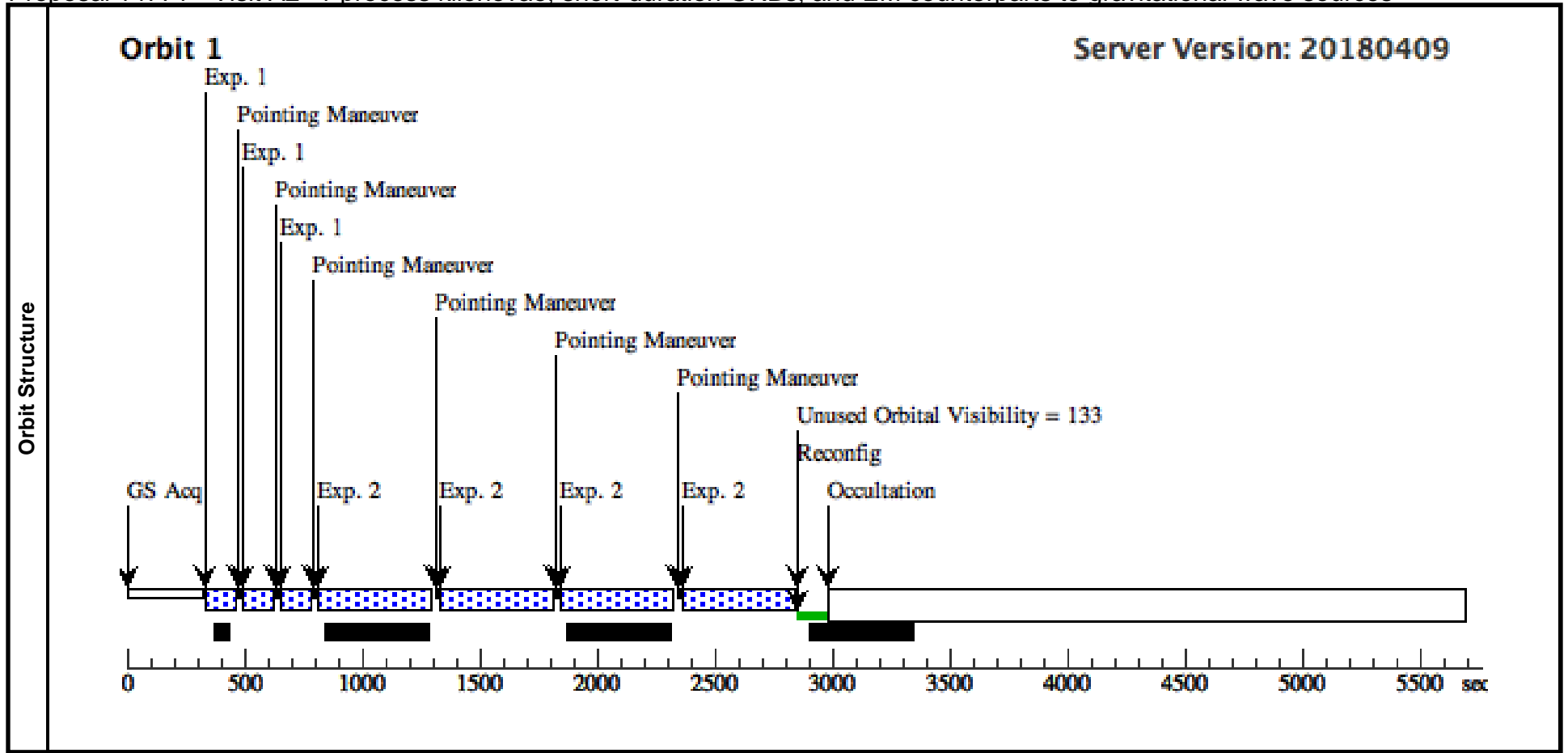
Fri Jun 22 00:00:32 GMT 2018

Visit	Proposal 14771, Visit A2, completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: SCHED 100%; SAME ORIENT AS A1; BETWEEN 27-AUG-2017:00:00:00 AND 30-AUG-2017:00:00:00		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	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	
(5)	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
	(2)	GRB170817A	RA: 13 09 48.0800 (197.4503333d) Dec: -23 22 53.20 (-23.38144d) Equinox: J2000		V=16+/-1	Reference Frame: ICRS
<i>Comments:</i> Category=GALAXY Description=[UNDESIGNATED]						

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(2) GRB170817A	WFC3/IR, MULTIACCUM, GRISM1024	F160W	NSAMP=7; SAMP-SEQ=STEP5 0			Pattern 5, Exps 1-1 in Visit A2 (5)	99.230677 Secs (297.692 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]
2		(2) GRB170817A	WFC3/IR, MULTIACCUM, GRISM1024	G141	NSAMP=10; SAMP-SEQ=SPAR S50			Pattern 1, Exps 2-2 in Visit A2 (1)	452.93635 Secs (1811.745 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]	[1]



Proposal 14771 - Visit A3 - r-process kilonovae, short-duration GRBs, and EM counterparts to gravitational wave sources

Fri Jun 22 00:00:32 GMT 2018

Visit	Proposal 14771, Visit A3, completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: SCHED 100%; BETWEEN 27-AUG-2017:00:00:00 AND 30-AUG-2017:00:00:00									
	Patterns	#	Primary Pattern			Secondary Pattern			Exposures	
		(3)	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), (2), (3)	
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections		Fluxes	Miscellaneous			
	(3)	GRB170817A-NGC4993	RA: 13 09 47.6700 (197.4486250d) Dec: -23 23 3.00 (-23.38417d) Equinox: J2000			V=16+/-1	Reference Frame: ICRS			
	<i>Comments:</i> Category=GALAXY Description=[UNDESIGNATED]									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(3) GRB170817A-NGC4993	(3) GRB170817A-NGC4993	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F475W	CR-SPLIT=NO; FLASH=9	POS TARG 0,0	Pattern 3, Exps 1-1 in Visit A3 (3)	150 Secs (600 Secs)	
									[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]
	2	(3) GRB170817A-NGC4993	(3) GRB170817A-NGC4993	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F814W	CR-SPLIT=NO; FLASH=9		Pattern 3, Exps 2-2 in Visit A3 (3)	140 Secs (560 Secs)	
								[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]	
3	(3) GRB170817A-NGC4993	(3) GRB170817A-NGC4993	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F606W	FLASH=9		Pattern 3, Exps 3-3 in Visit A3 (3)	90 Secs (360 Secs)		
								[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]	

