



18194 - Community Discovery Program: panchromatic CXO/VLA/HST observations of a NS merger

Cycle: 33, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

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Prof. Sebastiano Bernuzzi (CoI) (ESA Member)	Friedrich Schiller Universitat Jena
Dr. Phil Evans (CoI) (ESA Member)	University of Leicester

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>
01	(1) GW-PRECYC27	WFC3/UVIS	6	01-Oct-2025 15:02:09.0	yes
02	(1) GW-PRECYC27	WFC3/UVIS	6	01-Oct-2025 15:02:09.0	yes
03	(2) GW-CYC27	WFC3/UVIS	3	01-Oct-2025 15:02:10.0	yes
04	(2) GW-CYC27	WFC3/UVIS	6	01-Oct-2025 15:02:10.0	yes
05	(2) GW-CYC27	WFC3/UVIS	6	01-Oct-2025 15:02:11.0	yes
06	(2) GW-CYC27	WFC3/UVIS	6	01-Oct-2025 15:02:11.0	yes

33 Total Orbits Used

ABSTRACT

Chandra was the first facility to detect X-ray light from a neutron star (NS) merger. This ToO program continues Chandra's legacy in the revolutionary field of gravitational wave astronomy. Our goals are three-fold: (i) to characterize the diversity of emission from NS-NS mergers; (ii) to enable breakthroughs, such as the discovery of emission from a mass-gap or neutron star-black hole (NS-BH) merger; and (iii) to model panchromatic jet emission to constrain system parameters, particularly inclination and jet structure. This program will maximize the scientific output of LVK O4 and the first year of operations of new novel surveys, including Rubin/LSST and the La Silla Schmidt Southern Survey. We will support

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these Chandra observations via coordinated follow-up with the VLA and HST.

OBSERVING DESCRIPTION

This is a joint TOO program with Chandra as the main facility (and the VLA as an additional secondary facility) focused on gravitational wave (GW) events. There are two targets in this proposal: a GW trigger that occurs prior to Cycle 27, and a GW trigger that occurs during Cycle 27. All observations are imaging with WFC3/UVIS F606W and are non-disruptive TOO.

Below we outline the nominal plan although it is subject to change based on the specific event details.

For the pre-cycle 27 target, we will trigger 2 epochs of 6 orbits each to roughly align in time with our Chandra observations (target 3-sigma limit of $m = 28.5$ AB). If a source is detected in the second epoch, we may trigger one final epoch to serve as a host galaxy template.

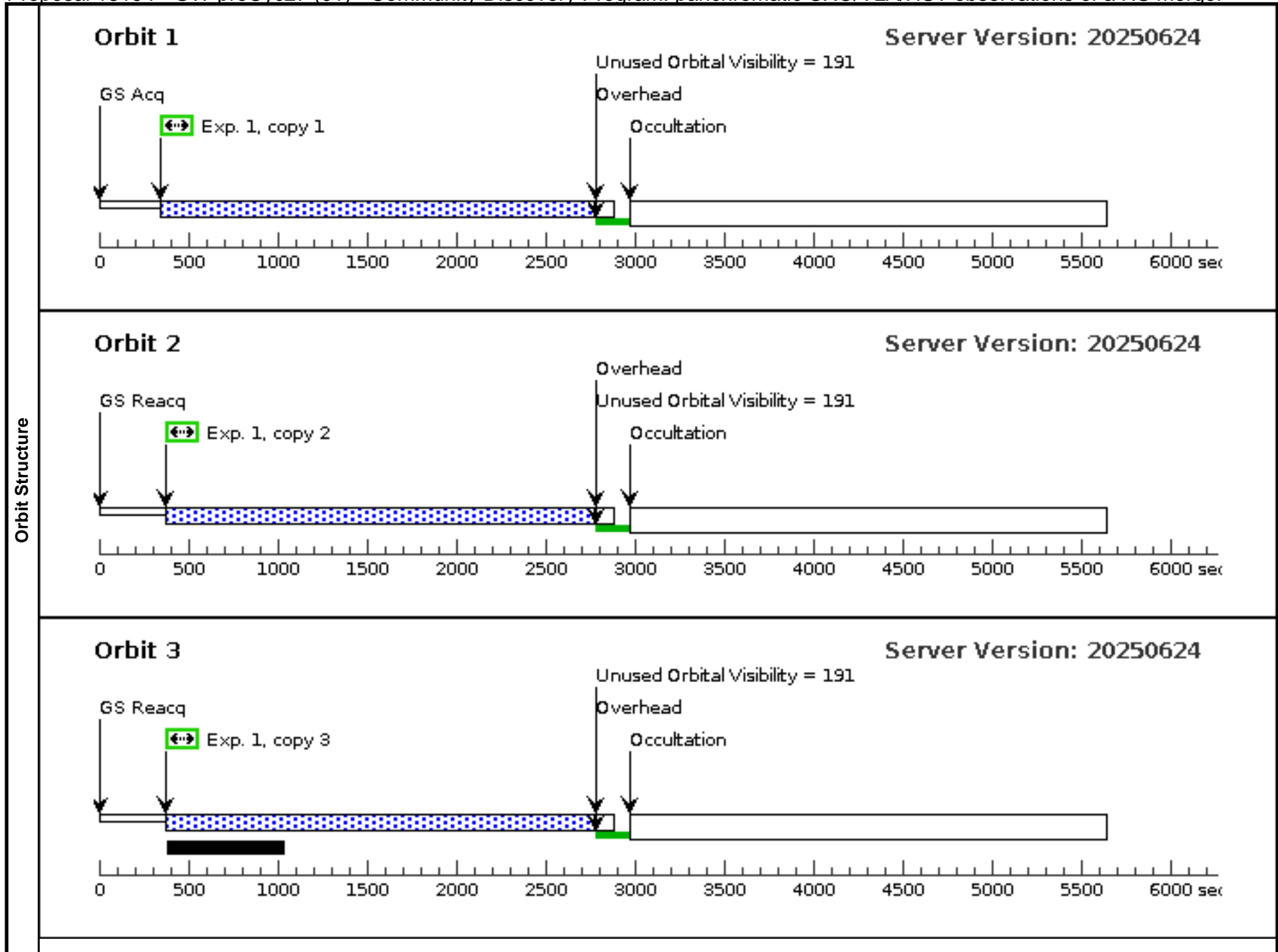
For the cycle 27 target, we will trigger one 3-orbit epoch to occur approximately 20-30 days after the GW trigger, to achieve a 3-sigma limit of $m = 28$ AB. We will trigger 2 epochs of 6 orbits each to roughly align in time with our Chandra observations, beyond 100 days after the GW trigger (target 3-sigma limit of $m = 28.5$ AB). If a source is detected in the second epoch, we may trigger one final epoch to serve as a host galaxy template.

The total time allocated to this program is 33 orbits.

Proposal 18194 - GW-preCyc27 (01) - Community Discovery Program: panchromatic CXO/VLA/HST observations of a NS merger

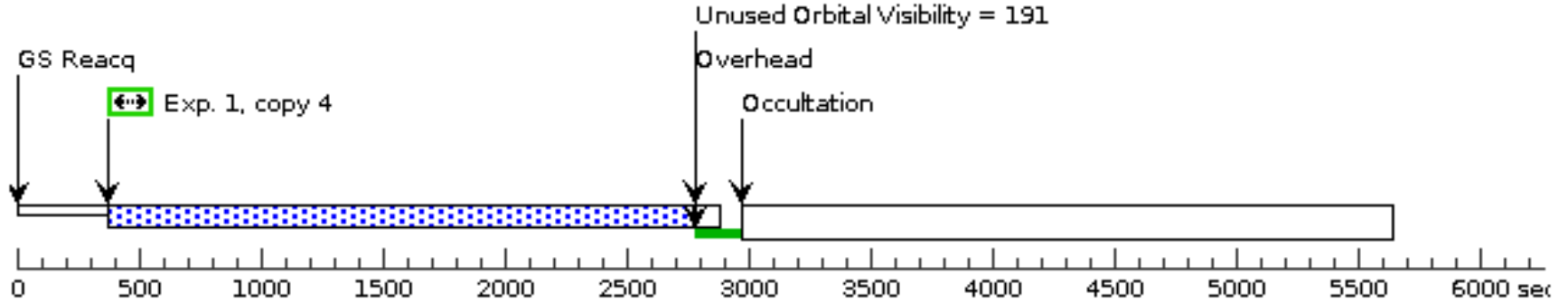
Wed Oct 01 19:02:12 GMT 2025

Visit	Proposal 18194, GW-preCyc27 (01) Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: TOO RESPONSE TIME 30.0D <i>Comments: pre-cycle 27 target, 100-150 day epoch</i>										
	Generic Targets	#	Name	Criteria	Description						
(1)		GW-PRECYC27	GW event	GAMMA RAY BURSTER NEUTRON STAR <i>Comments: GW trigger for which we have also triggered or plan to trigger Chandra observations</i>							
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
	1	(1) GW-PRECYC27	WFC3/UVIS, ACCUM, UVIS	F606W					2400 Secs X 6 (14400 Secs)		
										[=>(Copy 1)]	[1]
										[=>(Copy 2)]	[2]
										[=>(Copy 3)]	[3]
										[=>(Copy 4)]	[4]
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<i>Comments: TOO observation</i>											



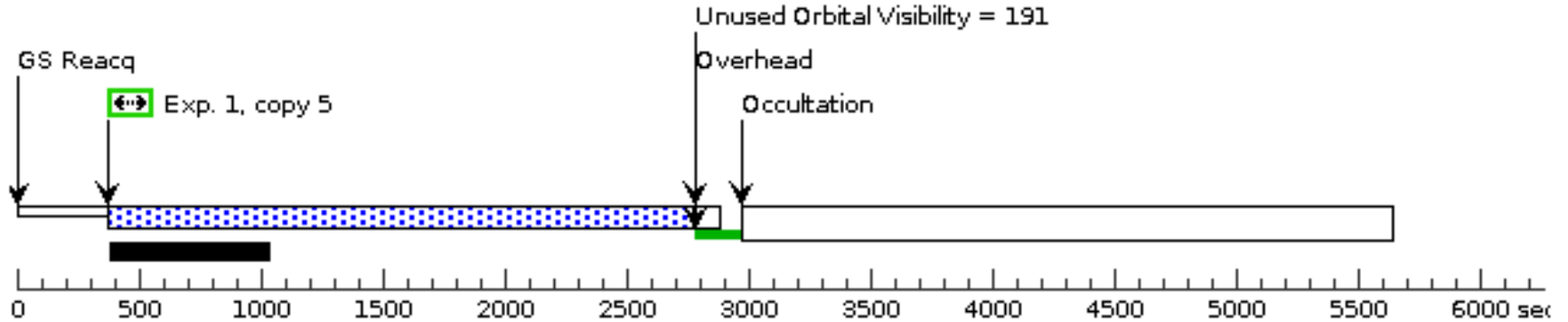
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Server Version: 20250624



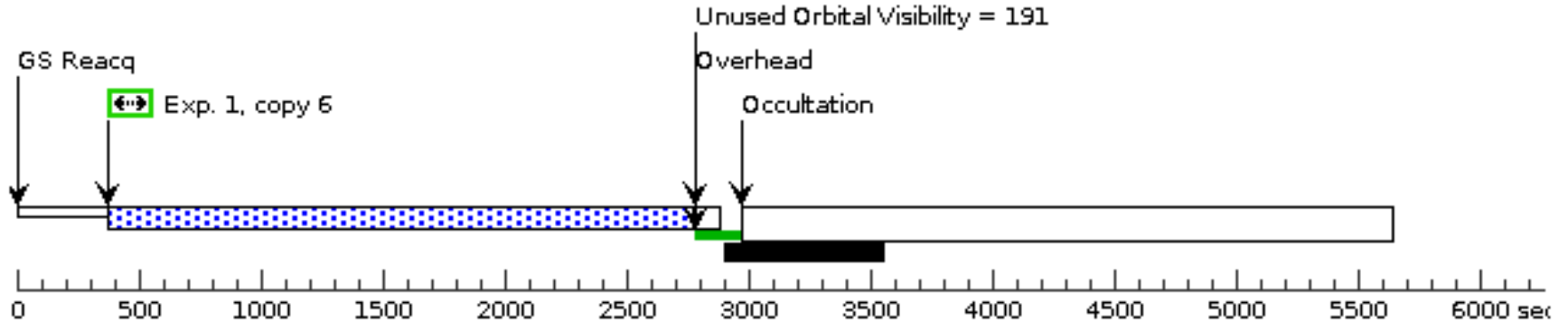
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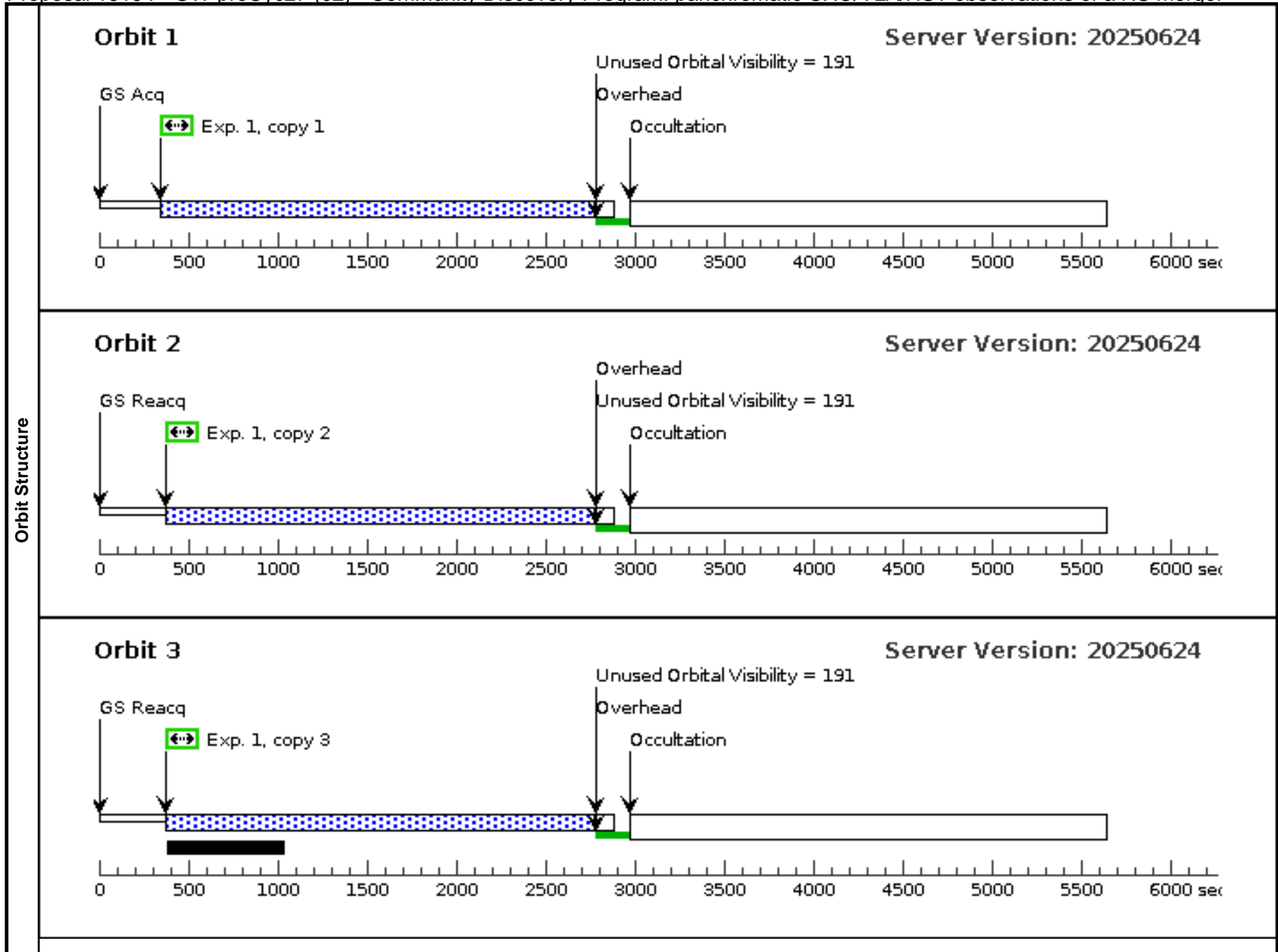
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Proposal 18194 - GW-preCyc27 (02) - Community Discovery Program: panchromatic CXO/VLA/HST observations of a NS merger

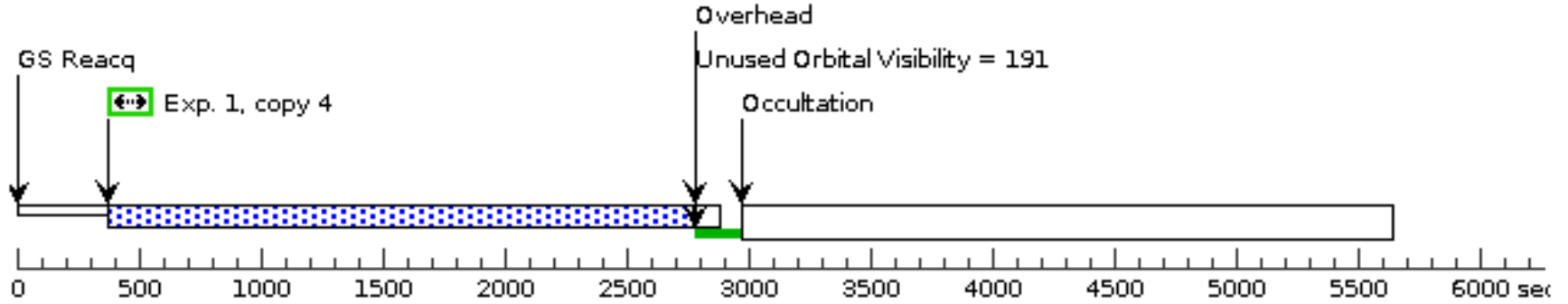
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Visit	Proposal 18194, GW-preCyc27 (02) Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: TOO RESPONSE TIME 30.0D <i>Comments: pre-cycle 27 target, 200-300 day epoch</i>									
	Generic Targets	#	Name	Criteria	Description					
(1)		GW-PRECYC27	GW event	GAMMA RAY BURSTER NEUTRON STAR <i>Comments: GW trigger for which we have also triggered or plan to trigger Chandra observations</i>						
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(1) GW-PRECYC27	WFC3/UVIS, ACCUM, UVIS	F606W	2400 Secs X 6 (14400 Secs)					
									[==>(Copy 1)]	[1]
									[==>(Copy 2)]	[2]
									[==>(Copy 3)]	[3]
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									[==>(Copy 5)]	[5]
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<i>Comments: TOO observation</i>										



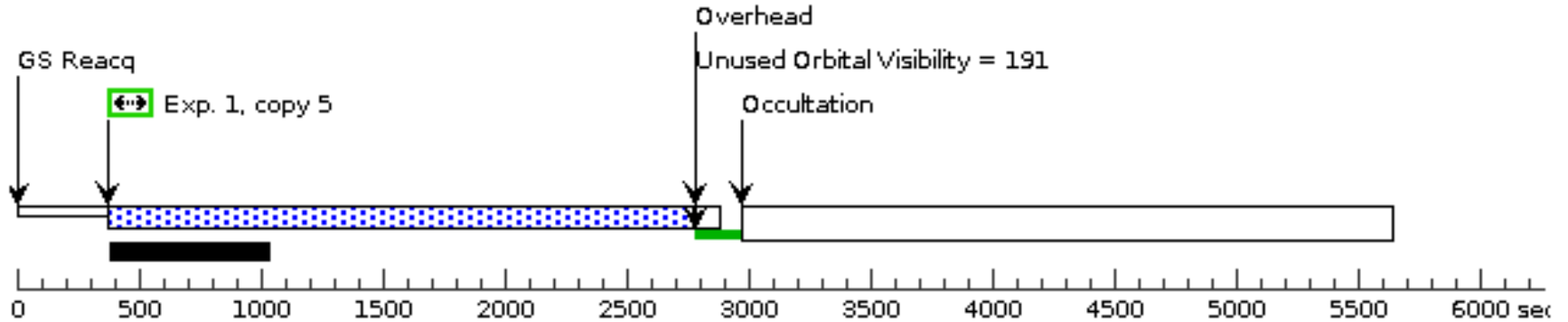
Orbit 4

Server Version: 20250624



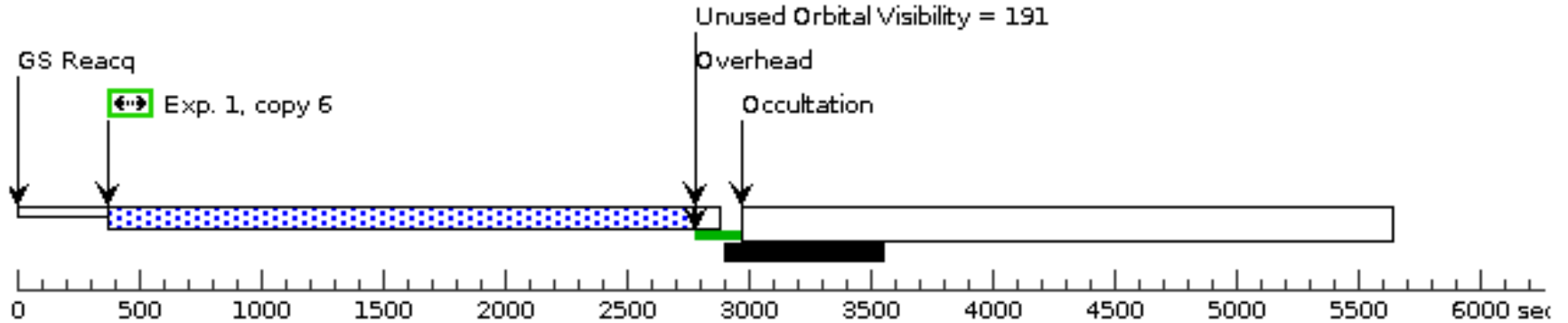
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Orbit 6

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Proposal 18194 - GW-Cyc27 (03) - Community Discovery Program: panchromatic CXO/VLA/HST observations of a NS merger

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Visit	Proposal 18194, GW-Cyc27 (03) Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: TOO RESPONSE TIME 21.0D <i>Comments: cycle 27 target, 20-30 day epoch</i>									
	Generic Targets	#	Name	Criteria	Description					
(2)		GW-CYC27	GW event	<i>Comments: GW trigger for which we have also triggered or plan to trigger Chandra observations</i>						
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(2) GW-CYC27	WFC3/UVIS, ACCUM, UVIS	F606W				2400 Secs X 3 (7200 Secs)	
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	<i>Comments: TOO observation</i>									



Proposal 18194 - GW-Cyc27 (04) - Community Discovery Program: panchromatic CXO/VLA/HST observations of a NS merger

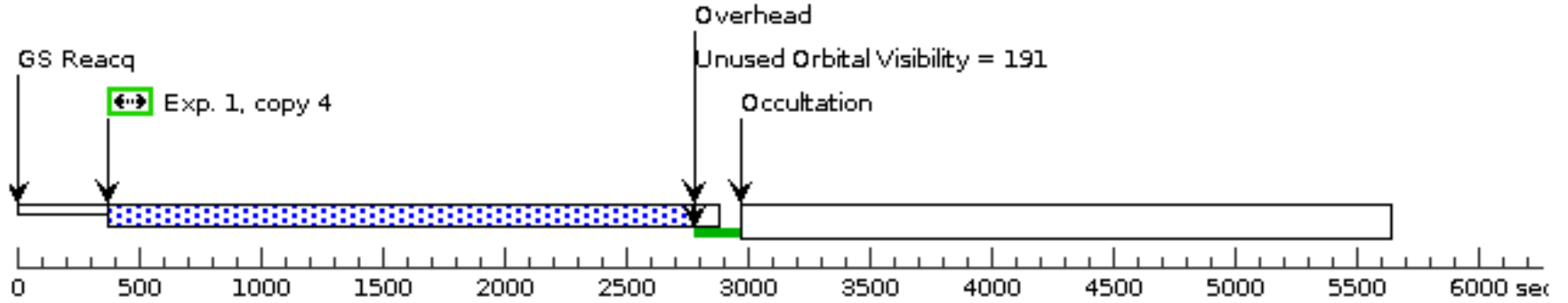
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Visit	Proposal 18194, GW-Cyc27 (04) Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: TOO RESPONSE TIME 30.0D Comments: cycle 27 target, 100-150 day epoch									
	Generic Targets	#	Name	Criteria	Description					
(2)		GW-CYC27	GW event	Comments: GW trigger for which we have also triggered or plan to trigger Chandra observations						
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(2) GW-CYC27	WFC3/UVIS, ACCUM, UVIS	F606W				2400 Secs X 6 (14400 Secs)	
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	Comments: TOO observation									



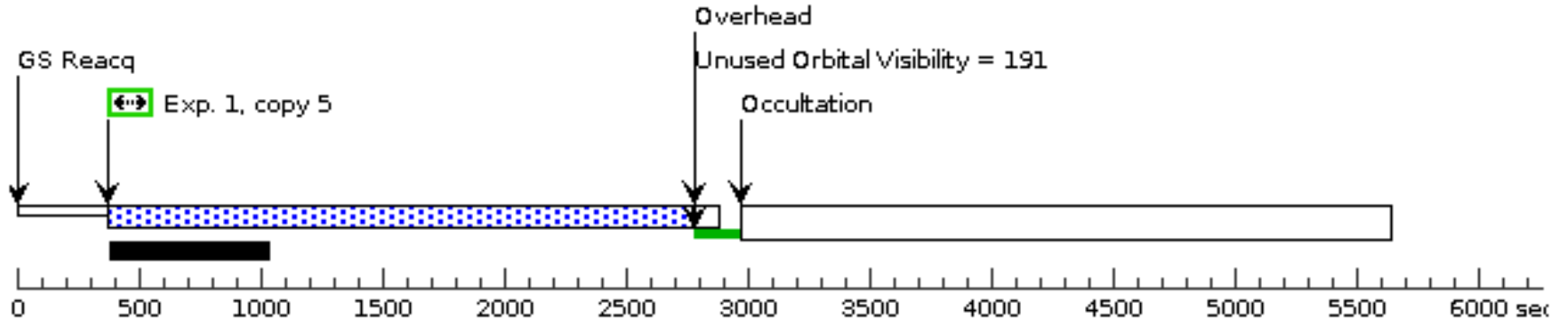
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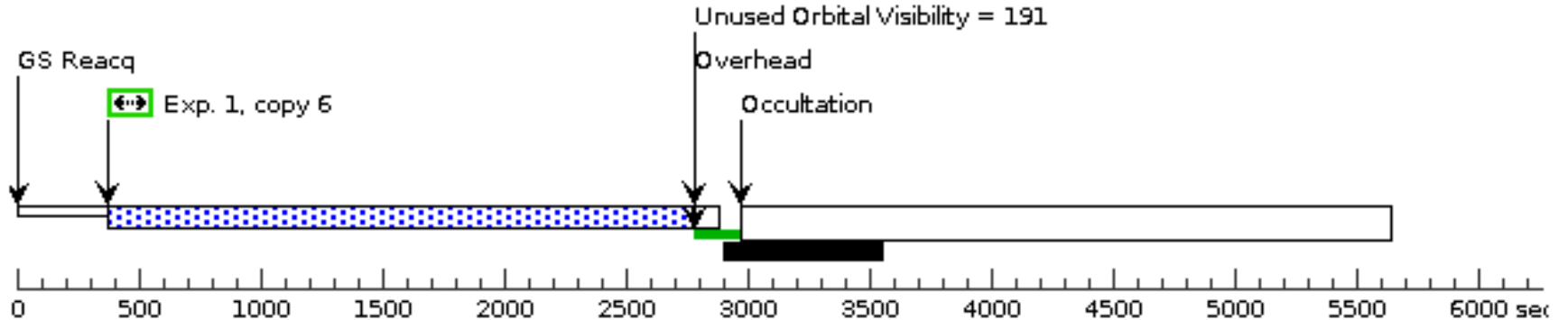
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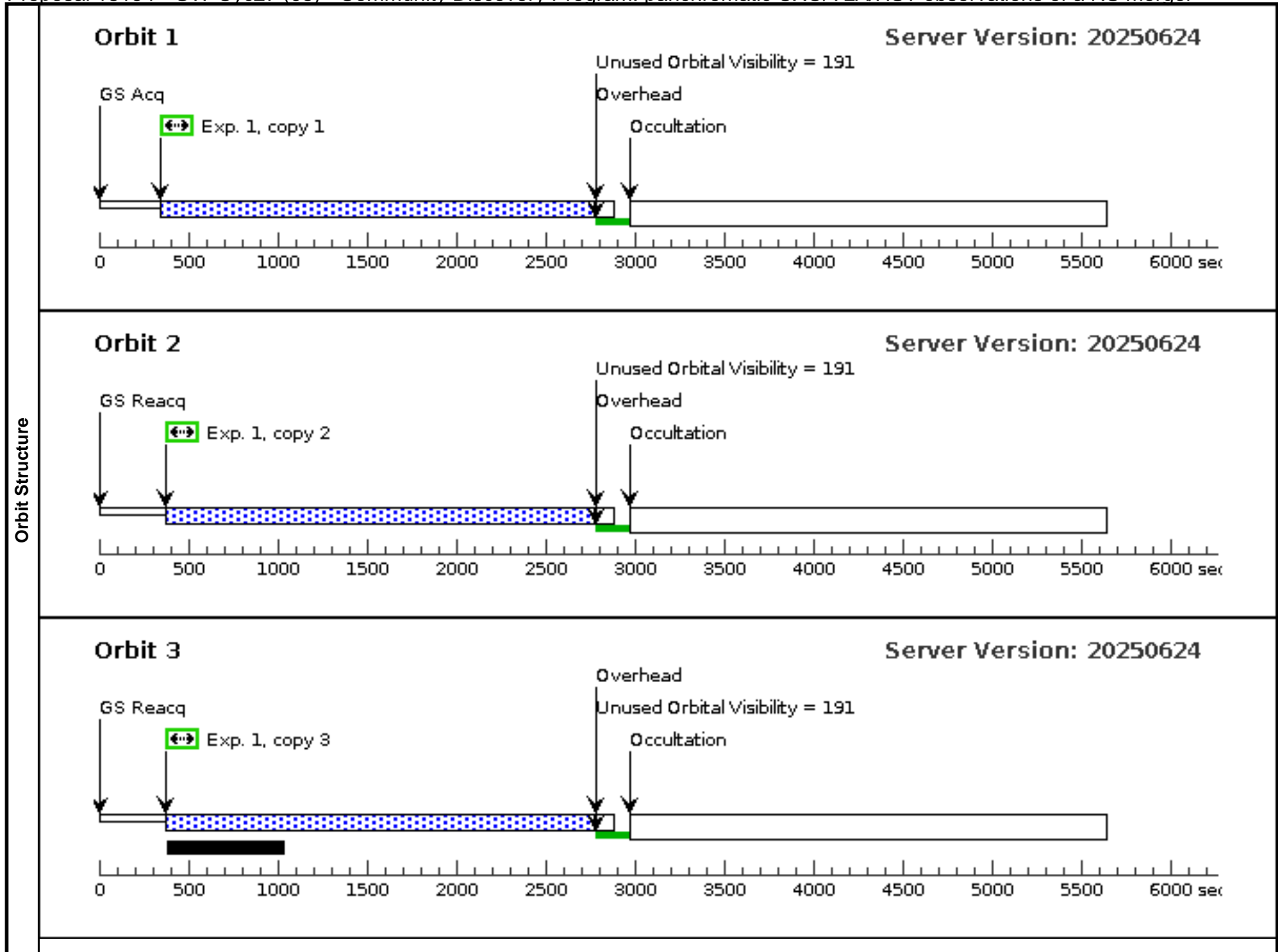
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Proposal 18194 - GW-Cyc27 (05) - Community Discovery Program: panchromatic CXO/VLA/HST observations of a NS merger

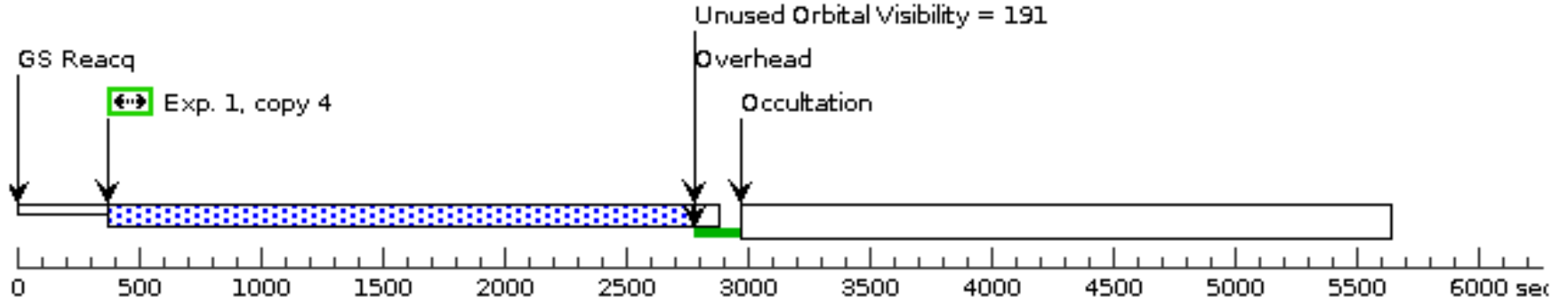
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Visit	Proposal 18194, GW-Cyc27 (05) Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: TOO RESPONSE TIME 30.0D Comments: cycle 27 target, 200-300 day epoch									
	Generic Targets	#	Name	Criteria	Description					
(2)		GW-CYC27	GW event	Comments: GW trigger for which we have also triggered or plan to trigger Chandra observations						
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(2) GW-CYC27	WFC3/UVIS, ACCUM, UVIS	F606W				2400 Secs X 6 (14400 Secs)	
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	Comments: TOO observation									



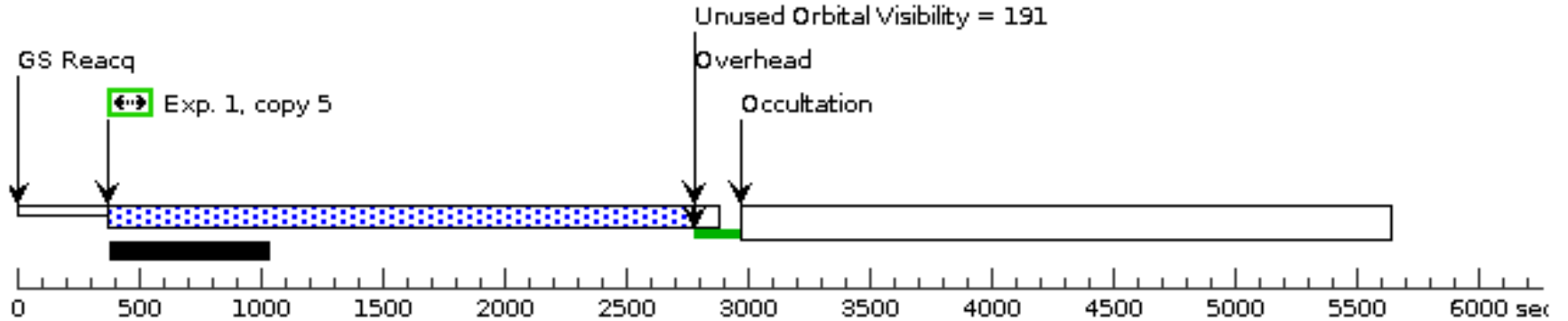
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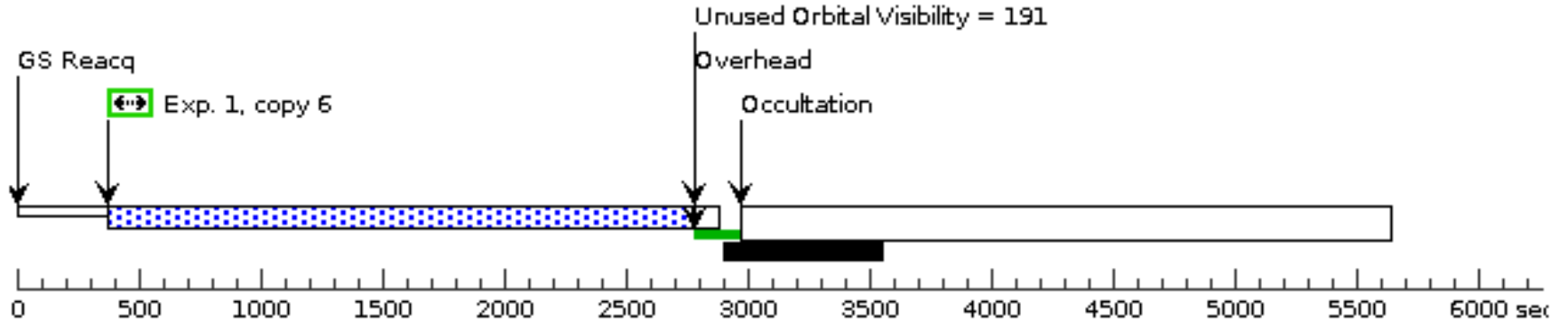
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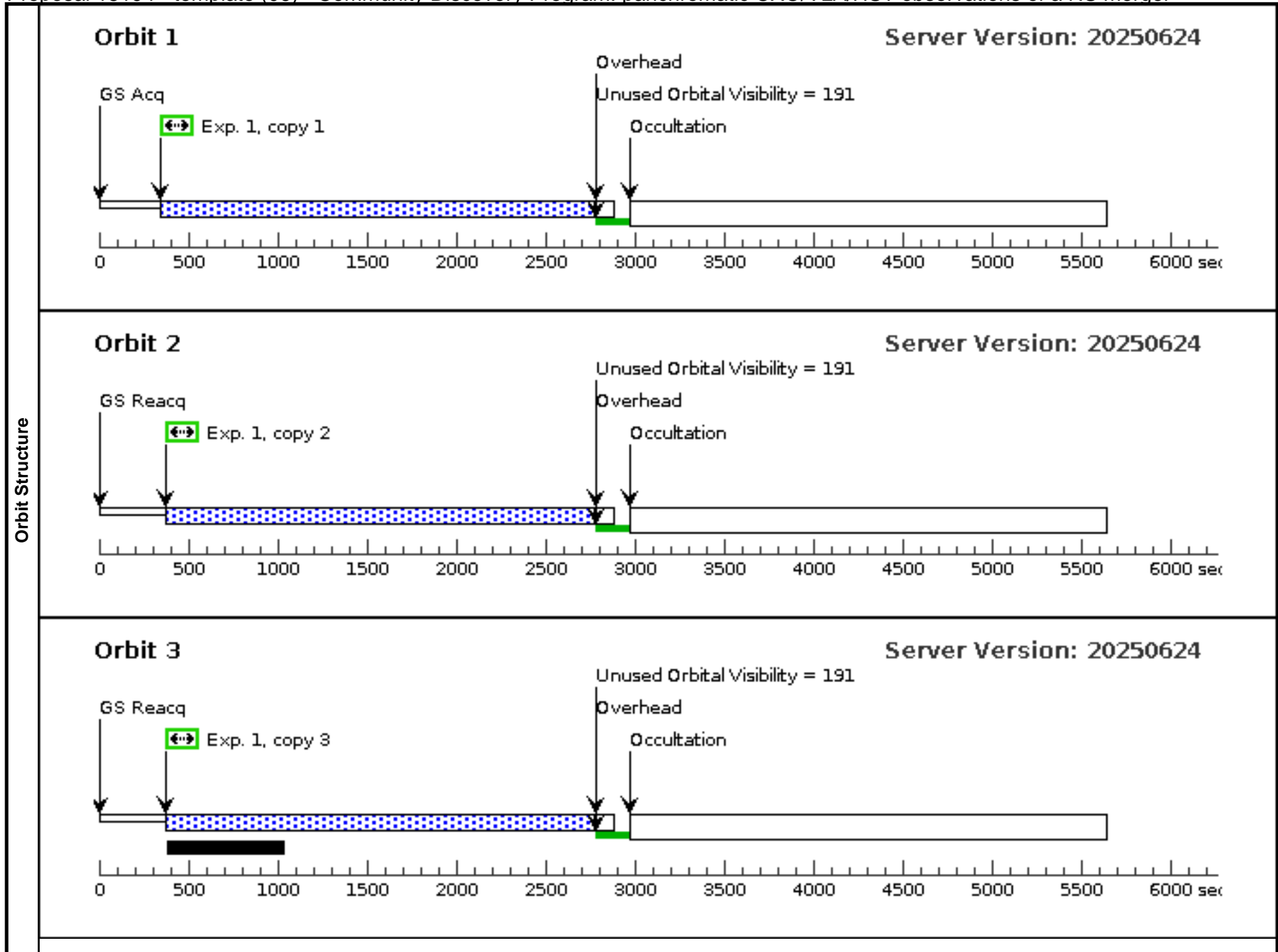
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Proposal 18194 - template (06) - Community Discovery Program: panchromatic CXO/VLA/HST observations of a NS merger

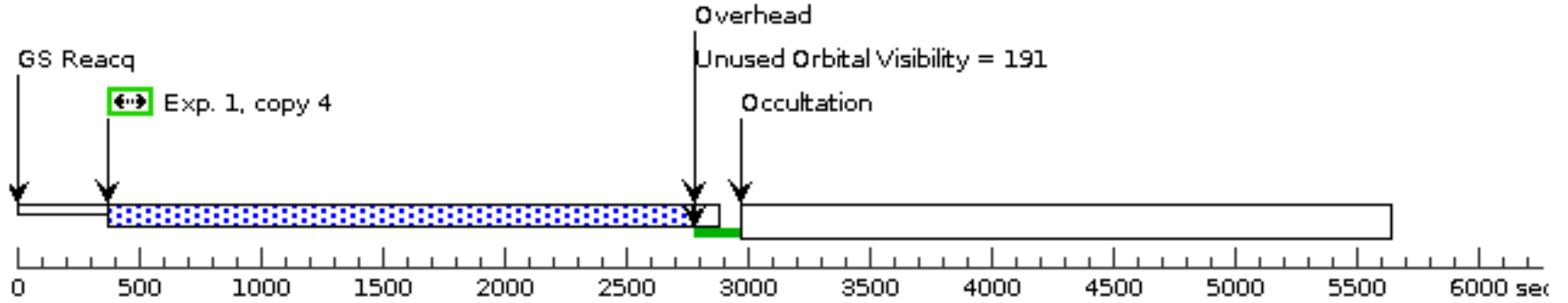
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Visit	Proposal 18194, template (06) Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: TOO RESPONSE TIME 30.0D <i>Comments: template for either target</i>									
	Generic Targets	#	Name	Criteria	Description					
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Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(2) GW-CYC27	WFC3/UVIS, ACCUM, UVIS	F606W				2400 Secs X 6 (14400 Secs)	
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	<i>Comments: TOO observation</i>									



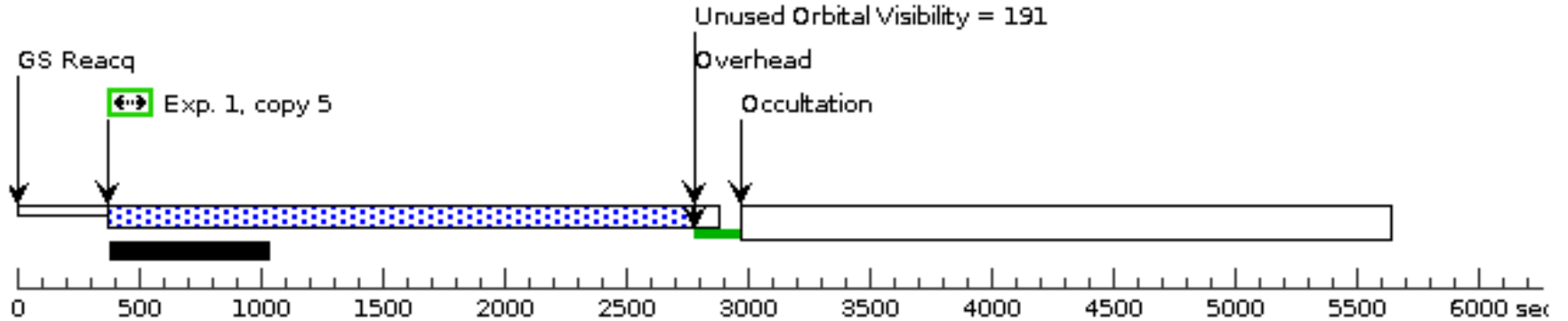
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