16840 - Two unique sources in a row: HLX-1 and a newborn hard tidal disruption event

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) FWB2009-HLX-1	ACS/SBC WFC3/UVIS	5	22-Apr-2022 00:00:16.0	yes

5 Total Orbits Used

ABSTRACT

We request a Chandra observation (80 ks) of two very rare objects that fall within the same field of view: the strong intermediate-mass black hole candidate ESO 243-49 HLX-1 and a newborn hard tidal disruption event (TDE). For HLX-1, which has been in a prolonged low state for nearly 4 yr, the data will be crucial to measure the current level of the low state and test two competing models for the formation of the system. Five HST orbits are also requested to pin down the host population and age by measuring the host in UV and optical when the contamination from the central source is minimal. For the new hard TDE, our goal is to constrain its long-term X-ray evolution, especially to detect the fast drop, which would be a strong indicator of a jet being shut off.

OBSERVING DESCRIPTION

Orbit 1: for ACS SBC F140LP, 4-point box dithering ~2640s of effective exposure time

Orbit 2 for WFC3 UVIS F300X, with UV flashing and WFC3-UVIS-DITHER-BOX, 1456s split into 4 exposures of 364s each. Then the last 2 exposures in the F336W filter, also with UV flashing and dithering, 364s each;

Orbit 3 for the last 2 exposures in the F336W filter, with UV flashing and dithering, 364s each, total of 1456s (including those of orbit 2). Then, all 4 exposures for F390W, dithered, 365s each, total of ~1460s (no UV flashing needed)

Orbit 4 for F555W, 1480s split into 4 dithered exposures of 370s each. Then the first 2 exposures in the F621M filter, also with dithering, 371s each;

orbit 5 for the last 2 dithered exposures in the F621M filter,371s each, total of 1484s. Then all 4 dithered exposures for F775W, 363s each, total of ~1452s.

Proposal 16840 - Visit 01 - Two unique sources in a row: HLX-1 and a newborn hard tidal disruption event

Visit

Proposal 16840, Visit 01, implementation Fri Apr 22 04:00:18 GMT 2022

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS, ACS/SBC

Special Requirements: (none)

Diagnostics

(Exposure 2 (Pattern 2, Exps 2-2 in Visit 01)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(Exposure 3 (Pattern 2, Exps 3-3 in Visit 01)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(Exposure 4 (Pattern 2, Exps 4-4 in Visit 01)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(Exposure 5 (Pattern 2, Exps 5-5 in Visit 01)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(Exposure 6 (Pattern 2, Exps 6-6 in Visit 01)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(Exposure 7 (Pattern 2, Exps 7-7 in Visit 01)) 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=ACS-SBC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.179 Line Spacing=0.116	Coordinate Frame=POS-TARG Pattern Orientation=20.02 Angle Between Sides=63.65 Center Pattern=false		(1)
(2)	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		(2), (3), (4), (5), (6), (7)

Fixed Targets

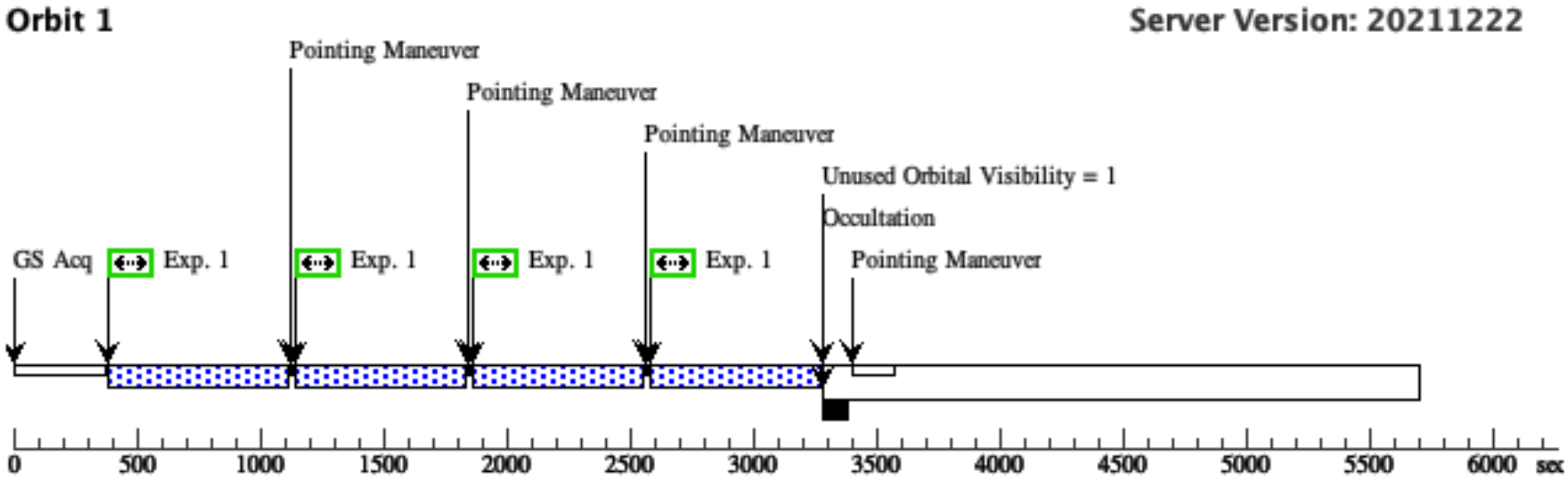
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	FWB2009-HLX-1	RA: 01 10 28.3000 (17.6179167d) Dec: -46 04 22.30 (-46.07286d) Equinox: J2000	Epoch of Position: 2015.5	V=24.5	Reference Frame: SIMBAD

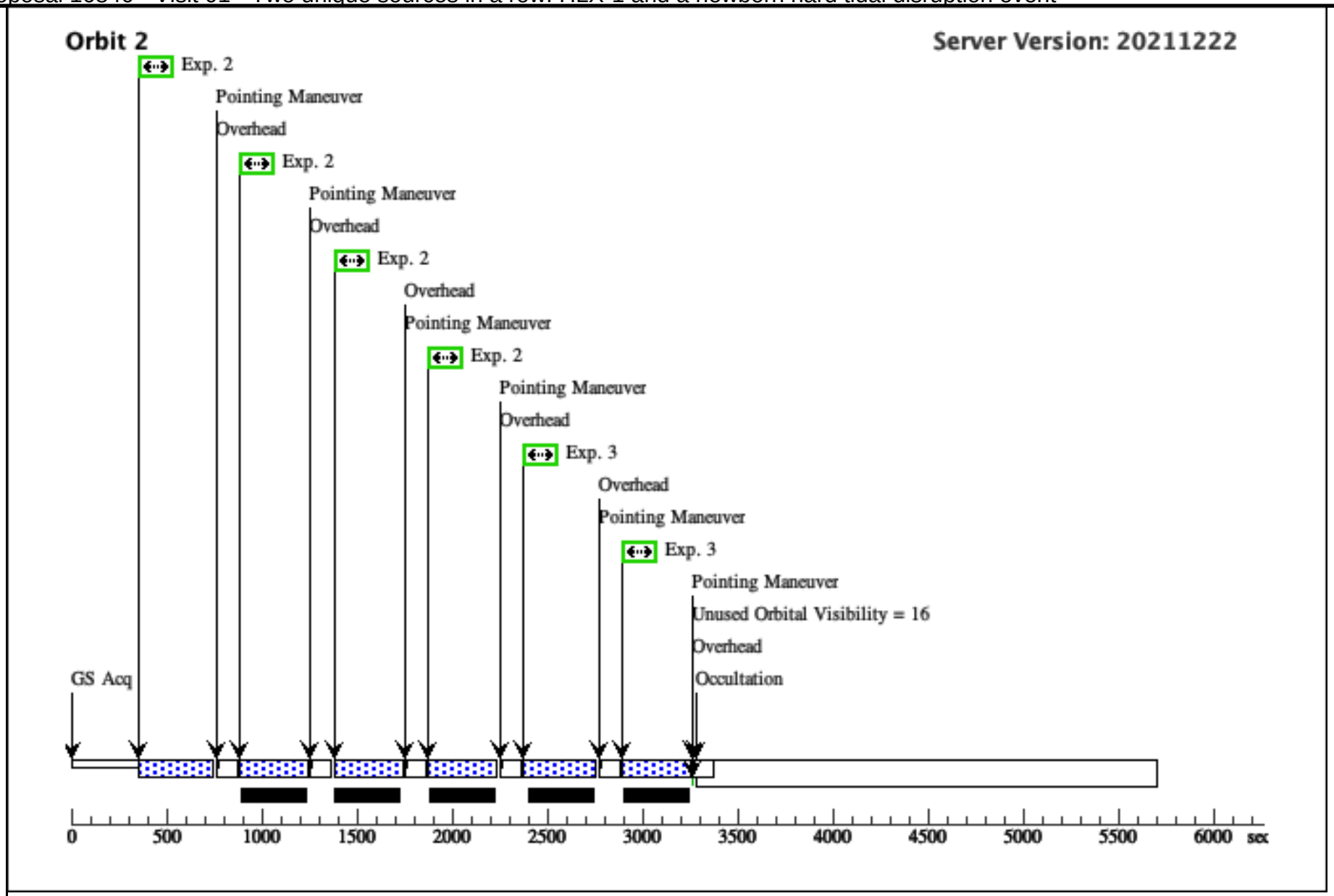
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STELLAR CLUSTER
Description=[GLOBULAR CLUSTER]

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(ACS.im.1011865)	(1) FWB2009-HLX-1	ACS/SBC, ACCUM, SBC	F140LP			Pattern 1, Exps 1-1 in Visit 01 (1)	675 Secs (2640 Secs)	
								[==>660.0 Secs (Pattern 1)]	***[1]***
								[==>660.0 Secs (Pattern 2)]	
								[==>660.0 Secs (Pattern 3)]	
								[==>660.0 Secs (Pattern 4)]	
	Comments: ACS.im.1011860 ETC run done using the well-determined Vega brightness in the U band and the best-fitting model spectrum. ACS.im.1011865 ETC run done using the observed flux density at 1500 Ang, from 2013. The two runs give essentially the same result, S/N = 10 for the requested exposure time. This is our best estimate of how the source will look like in 6 months' time. However, it could turn out to be a factor of 2 brighter or fainter, so the S/N could be ~7 or ~15.								
2		(1) FWB2009-HLX-1	WFC3/UVIS, ACCUM, UVIS2-C512C-CTE	F300X	FLASH=10		Pattern 2, Exps 2-2 in Visit 01 (2)	384 Secs (1448 Secs)	
								[==>362.0 Secs (Pattern 1)]	***[2]***
								[==>362.0 Secs (Pattern 2)]	
								[==>362.0 Secs (Pattern 3)]	
								[==>362.0 Secs (Pattern 4)]	
3		(1) FWB2009-HLX-1	WFC3/UVIS, ACCUM, UVIS2-C512C-CTE	F336W	FLASH=10		Pattern 2, Exps 3-3 in Visit 01 (2)	402 Secs (1440 Secs)	
								[==>360.0 Secs (Pattern 1)]	***[2]***
								[==>360.0 Secs (Pattern 2)]	
								[==>360.0 Secs (Pattern 3)]	***[3]***
								[==>360.0 Secs (Pattern 4)]	
4		(1) FWB2009-HLX-1	WFC3/UVIS, ACCUM, UVIS2-C512C-CTE	F390W	FLASH=9		Pattern 2, Exps 4-4 in Visit 01 (2)	403 Secs (1452 Secs)	
								[==>363.0 Secs (Pattern 1)]	***[3]***
								[==>363.0 Secs (Pattern 2)]	
								[==>363.0 Secs (Pattern 3)]	
								[==>363.0 Secs (Pattern 4)]	
5		(1) FWB2009-HLX-1	WFC3/UVIS, ACCUM, UVIS2-C512C-CTE	F555W			Pattern 2, Exps 5-5 in Visit 01 (2)	402 Secs (1464 Secs)	
								[==>366.0 Secs (Pattern 1)]	***[4]***
								[==>366.0 Secs (Pattern 2)]	
								[==>366.0 Secs (Pattern 3)]	
								[==>366.0 Secs (Pattern 4)]	
6		(1) FWB2009-HLX-1	WFC3/UVIS, ACCUM, UVIS2-C512C-CTE	F621M	FLASH=6		Pattern 2, Exps 6-6 in Visit 01 (2)	402 Secs (1472 Secs)	
								[==>368.0 Secs (Pattern 1)]	***[4]***
								[==>368.0 Secs (Pattern 2)]	
								[==>368.0 Secs (Pattern 3)]	***[5]***
								[==>368.0 Secs (Pattern 4)]	
7		(1) FWB2009-HLX-1	WFC3/UVIS, ACCUM, UVIS2-C512C-CTE	F775W	FLASH=6		Pattern 2, Exps 7-7 in Visit 01 (2)	402 Secs (1444 Secs)	
								[==>361.0 Secs (Pattern 1)]	***[5]***
								[==>361.0 Secs (Pattern 2)]	
								[==>361.0 Secs (Pattern 3)]	
								[==>361.0 Secs (Pattern 4)]	

Orbit Structure




Orbit 2
Server Version: 20211222
Exp. 2
Pointing Maneuver
Overhead
Exp. 2
Pointing Maneuver
Overhead
Exp. 2
Overhead
Pointing Maneuver
Exp. 2
Pointing Maneuver
Overhead
Exp. 3
Overhead
Pointing Maneuver
Exp. 3
Pointing Maneuver
Unused Orbital Visibility = 16
Overhead
Occultation
GS Acq
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2000
2500
3000
3500
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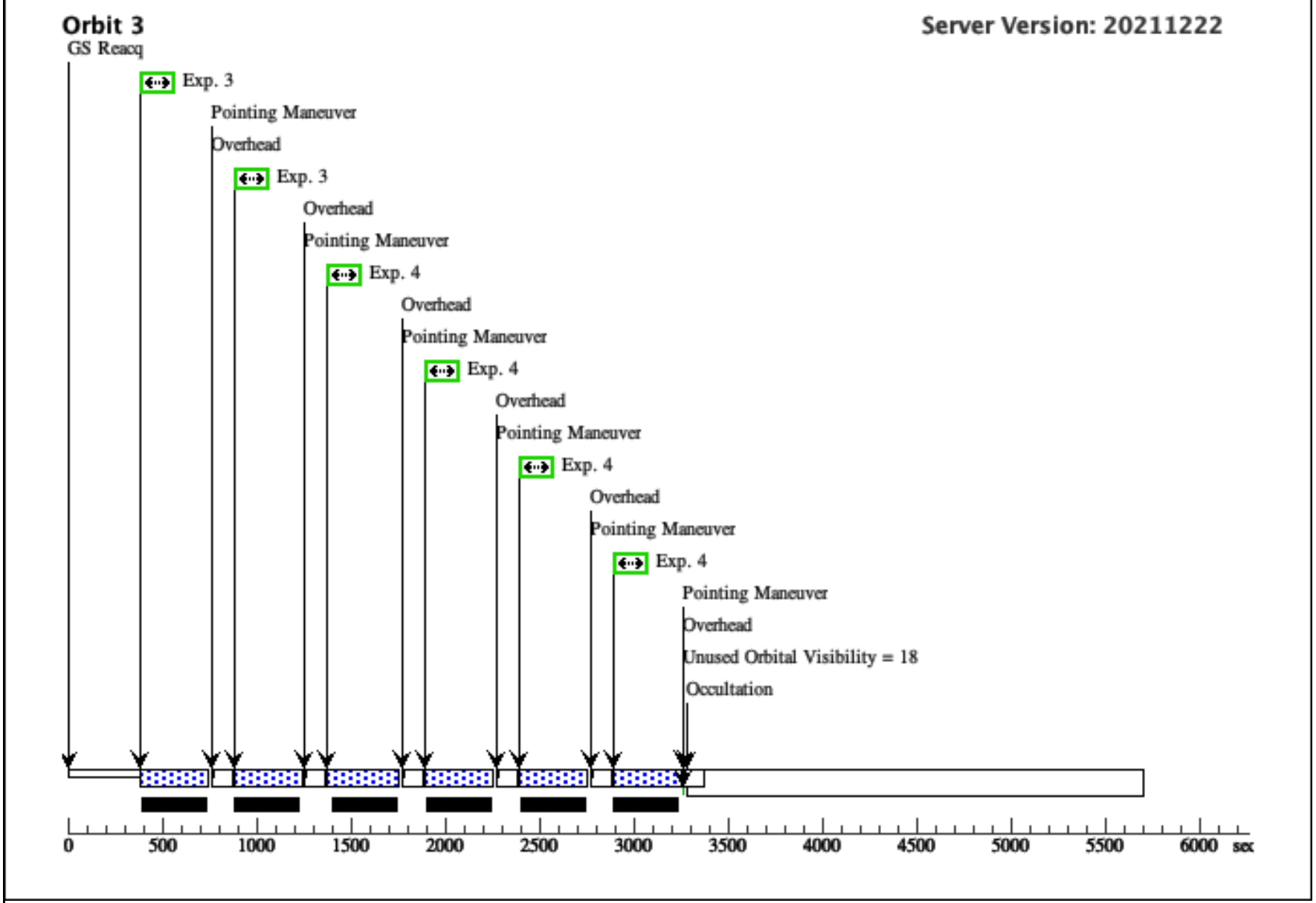
4500
5000
5500
6000
sec


Orbit 3
Server Version: 20211222
GS Reacq
Exp. 3
Pointing Maneuver
Overhead
Exp. 3
Overhead
Pointing Maneuver
Exp. 4
Overhead
Pointing Maneuver
Exp. 4
Overhead
Pointing Maneuver
Exp. 4
Overhead
Pointing Maneuver
Exp. 4
Pointing Maneuver
Overhead
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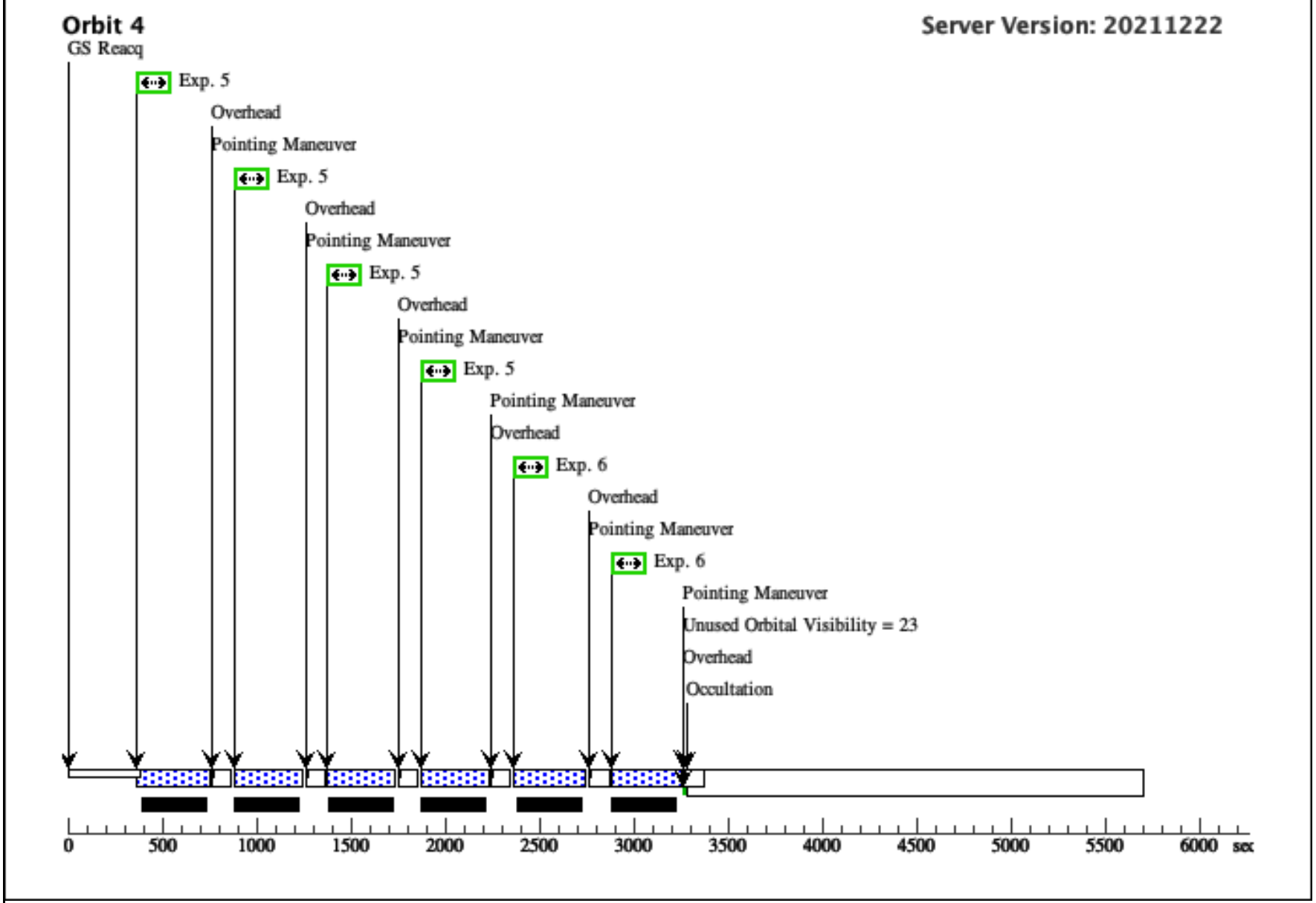
2500
3000
3500
4000
4500
5000
5500
6000
sec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GS Reacq
Exp. 5
Overhead
Pointing Maneuver
Exp. 5
Overhead
Pointing Maneuver
Exp. 5
Overhead
Pointing Maneuver
Exp. 5
Pointing Maneuver
Overhead
Exp. 6
Overhead
Pointing Maneuver
Exp. 6
Pointing Maneuver
Unused Orbital Visibility = 23
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Occultation
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3000
3500
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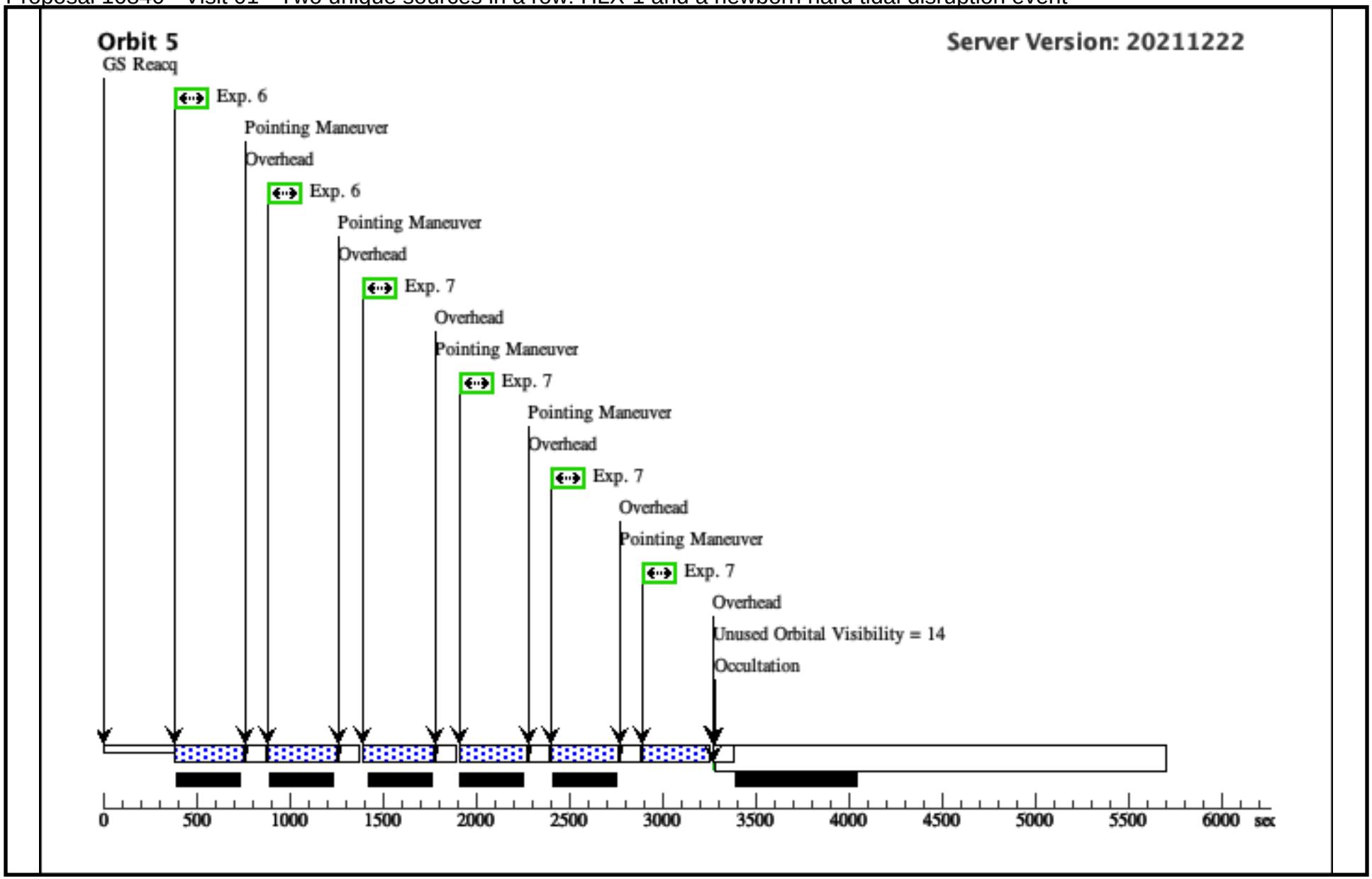
4500
5000
5500
6000
sec


Orbit 5
Server Version: 20211222
GS Reacq
Exp. 6
Pointing Maneuver
Overhead
Exp. 6
Pointing Maneuver
Overhead
Exp. 7
Overhead
Pointing Maneuver
Exp. 7
Pointing Maneuver
Overhead
Exp. 7
Overhead
Pointing Maneuver
Exp. 7
Overhead
Unused Orbital Visibility = 14
Occultation
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2000
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4500
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6000
sec