13403 - Monitoring the awakening of the dormant SMBH at the center of our galaxy

Cycle: 21, 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) NAME-SGR-A	WFC3/IR	6	02-Jan-2014 21:14:27.0	yes

6 Total Orbits Used

ABSTRACT

The recently discovered G2 dense dusty gas cloud, infalling towards the dormant SMBH at the center of our galaxy SgrA*, should reach its pericenter in September 2013. The X-ray luminosity of SgrA* is expected to increase significantly at this period and the fragmentation of this cloud should lead to an enhanced activity period over several months/years. Therefore, we propose a large program to monitor SgrA* during the course of

the G2 cloud near its pericenter passage and after this event, combining the XMM-Newton high-throughput with several multi-wavelength observations with ground-based telescopes and satellites. This will offer us an unique opportunity to study accretion events on a dormant SMBH and its (re-)activation process.

OBSERVING DESCRIPTION

Our XMM observations will occur in 3 blocks of 53 ksec each, on Feb 27, Mar 15, and Apr 04, 2014 with the observation starts matching the VLT visibility windows of Sgr A* in Chile. Our plan is to use the 5-6 consecutive SAA-free orbits that are available each day to obtain observations over a time span of 8 hours, interrupted only by Earth occultation. We plan to obtain the WFC3/IR observations with the F153M filter. We will use the SPARS25 readout sequence, which gives us stable, equally-spaced readout intervals of 25 secs, and a total time per exposure of 5-6 minutes, which is long enough to perform WFC3 buffer dumps in parallel with the exposures, thus maximizing our on-source time. We will embed the exposures within a dither pattern in order to mitigate the effects of bad pixels, flat-field uncertainties, and persistence from bright stars. A total of 8 such exposures can be obtained in each orbit, giving us nearly constant coverage of Sgr A* over a span of about 50 minutes per orbit.

REAL TIME JUSTIFICATION

Simultaneous XMM-Newton and HST observations.

ADDITIONAL COMMENTS

The 6 HST orbits of this joint XMM/HST program 13403 (PI: N. Grosso) must be scheduled in coordination with the 22 HST orbits awarded to the companion program 13316 (PI: H. Bushouse).

Visit

Proposal 13403, Visit 01, implementation Fri Jan 03 02:14:52 GMT 2014

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: BETWEEN 28-FEB-2014:18:21:00 AND 01-MAR-2014:09:04:00; BETWEEN 10-MAR-2014:14:20:00 AND 11-MAR-2014:05:03:00; BETWEEN 02-APR-2014:02:57:00 AND 02-APR-2014:17:40:00

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		(1), (2), (3), (4), (5), (6), (7), (8), (9), (10), (11), (12)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	NAME-SGR-A	RA: 17 45 40.0360 (266.4168167d) Dec: -29 00 28.17 (-29.00783d) Equinox: J2000		V=35 0.15 mJy in H-band	Reference Frame: SIMBAD

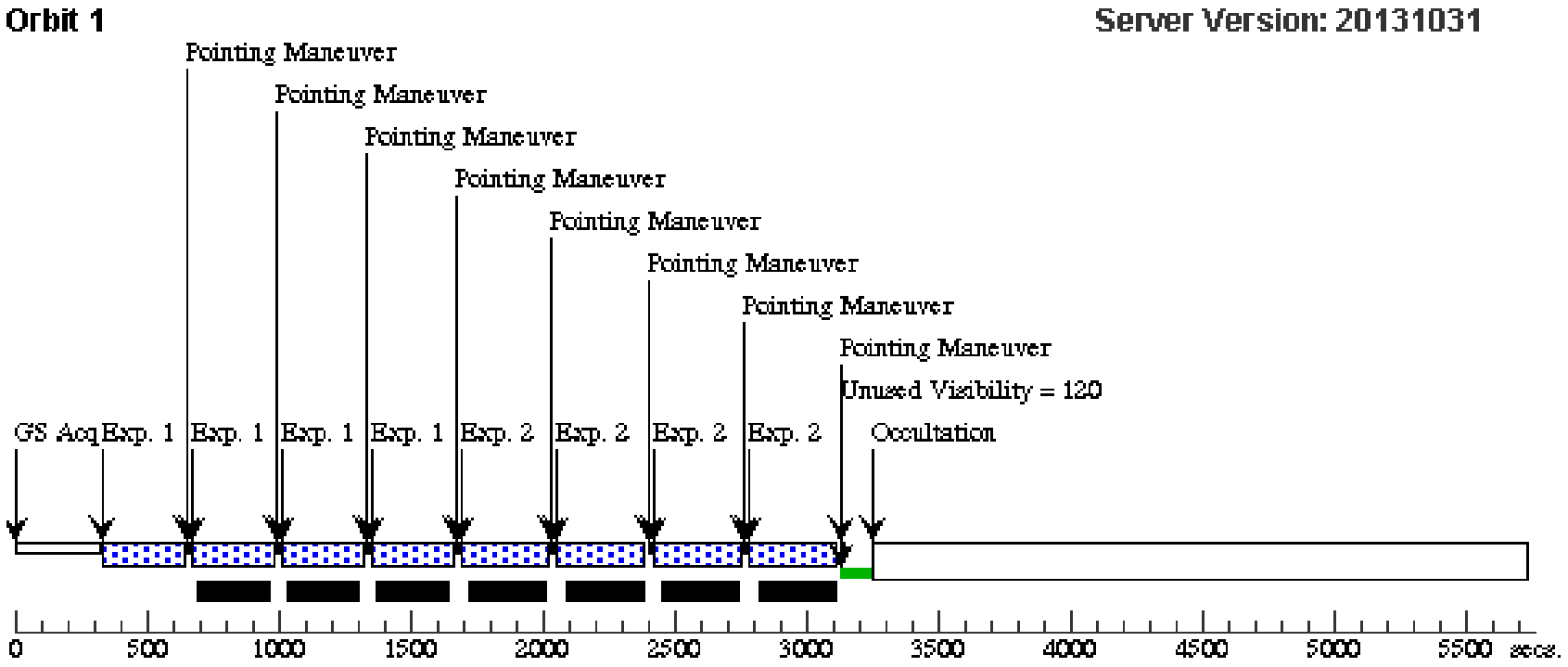
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

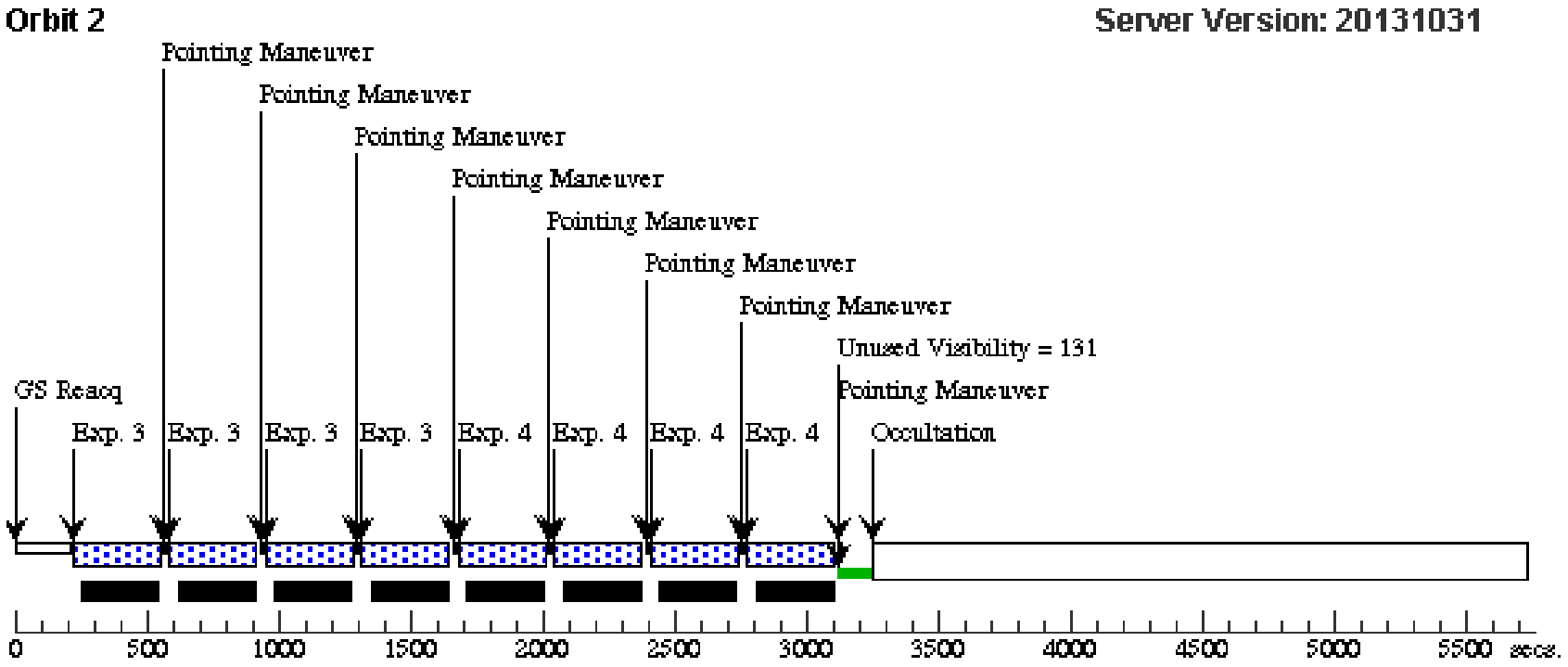
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) NAME-SGR-A	WFC3/IR, MULTIACCUM, IR	F153M	SAMP-SEQ=SPARS25; NSAMP=12		Sequence 1-2 Non-Int in Visit 01 Pattern 1, Exps 1-1 in Sequence 1-2 Non-Int in Visit 01 (1)	277.937956 Secs (1111.752 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
2		(1) NAME-SGR-A	WFC3/IR, MULTIACCUM, IR	F153M	SAMP-SEQ=SPARS25; NSAMP=13		Sequence 1-2 Non-Int in Visit 01 Pattern 1, Exps 2-2 in Sequence 1-2 Non-Int in Visit 01 (1)	302.938471 Secs (1211.754 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
3		(1) NAME-SGR-A	WFC3/IR, MULTIACCUM, IR	F153M	SAMP-SEQ=SPARS25; NSAMP=13		Sequence 3-4 Non-Int in Visit 01 Pattern 1, Exps 3-3 in Sequence 3-4 Non-Int in Visit 01 (1)	302.938471 Secs (1211.754 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[2]***
4		(1) NAME-SGR-A	WFC3/IR, MULTIACCUM, IR	F153M	SAMP-SEQ=SPARS25; NSAMP=13		Sequence 3-4 Non-Int in Visit 01 Pattern 1, Exps 4-4 in Sequence 3-4 Non-Int in Visit 01 (1)	302.938471 Secs (1211.754 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[2]***
5		(1) NAME-SGR-A	WFC3/IR, MULTIACCUM, IR	F153M	SAMP-SEQ=SPARS25; NSAMP=13		Sequence 5-6 Non-Int in Visit 01 Pattern 1, Exps 5-5 in Sequence 5-6 Non-Int in Visit 01 (1)	302.938471 Secs (1211.754 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[3]***
6		(1) NAME-SGR-A	WFC3/IR, MULTIACCUM, IR	F153M	SAMP-SEQ=SPARS25; NSAMP=13		Sequence 5-6 Non-Int in Visit 01 Pattern 1, Exps 6-6 in Sequence 5-6 Non-Int in Visit 01 (1)	302.938471 Secs (1211.754 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[3]***
7		(1) NAME-SGR-A	WFC3/IR, MULTIACCUM, IR	F153M	SAMP-SEQ=SPARS25; NSAMP=13		Sequence 7-8 Non-Int in Visit 01 Pattern 1, Exps 7-7 in Sequence 7-8 Non-Int in Visit 01 (1)	302.938471 Secs (1211.754 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[4]***
8		(1) NAME-SGR-A	WFC3/IR, MULTIACCUM, IR	F153M	SAMP-SEQ=SPARS25; NSAMP=13		Sequence 7-8 Non-Int in Visit 01 Pattern 1, Exps 8-8 in Sequence 7-8 Non-Int in Visit 01 (1)	302.938471 Secs (1211.754 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[4]***

	9	(1) NAME-SGR-A	WFC3/IR, MULTIACCUM, IR	F153M	SAMP-SEQ=SPARS 25; NSAMP=13	Sequence 9-10 Non-Int in Visit 01 Pattern 1, Exps 9-9 in Sequence 9-10 Non-Int in Visit 01 (1)	302.938471 Secs (1211.754 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[5]***
	10	(1) NAME-SGR-A	WFC3/IR, MULTIACCUM, IR	F153M	SAMP-SEQ=SPARS 25; NSAMP=13	Sequence 9-10 Non-Int in Visit 01 Pattern 1, Exps 10-10 in Sequence 9-10 Non-Int in Visit 01 (1)	302.938471 Secs (1211.754 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[5]***
	11	(1) NAME-SGR-A	WFC3/IR, MULTIACCUM, IR	F153M	SAMP-SEQ=SPARS 25; NSAMP=13	Sequence 11-12 Non-Int in Visit 01 Pattern 1, Exps 11-11 in Sequence 11-12 Non-Int in Visit 01 (1)	302.938471 Secs (1211.754 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[6]***
	12	(1) NAME-SGR-A	WFC3/IR, MULTIACCUM, IR	F153M	SAMP-SEQ=SPARS 25; NSAMP=13	Sequence 11-12 Non-Int in Visit 01 Pattern 1, Exps 12-12 in Sequence 11-12 Non-Int in Visit 01 (1)	302.938471 Secs (1211.754 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[6]***

Orbit Structure

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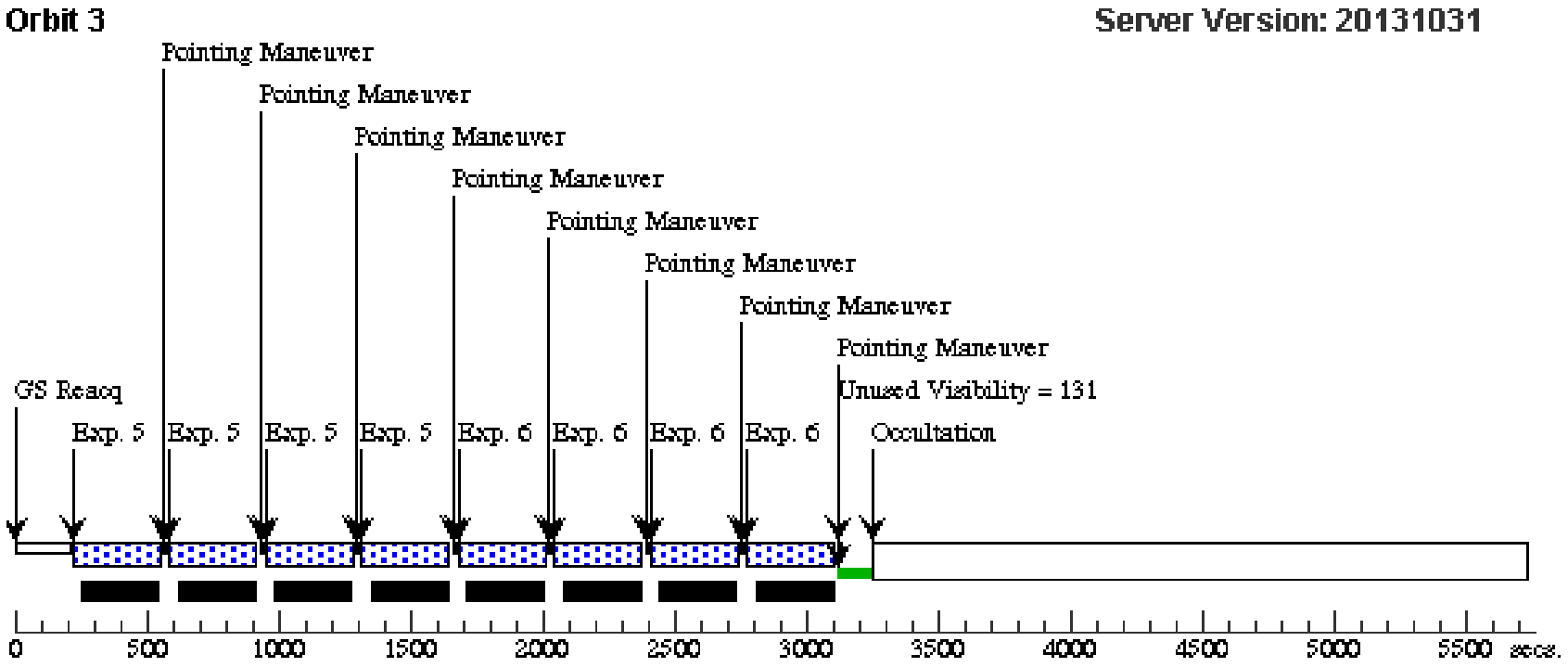
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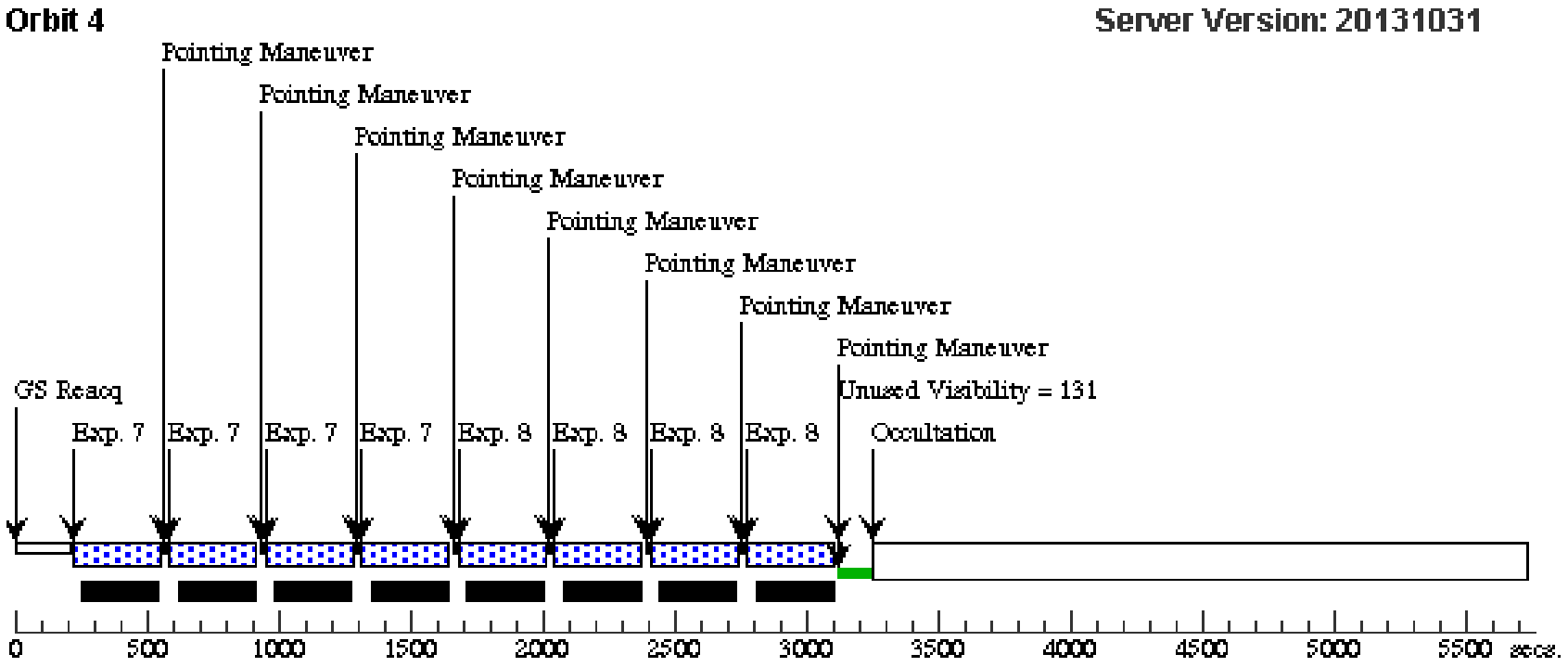
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Exp. 7
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Exp. 7
Exp. 7
Exp. 8
Exp. 8
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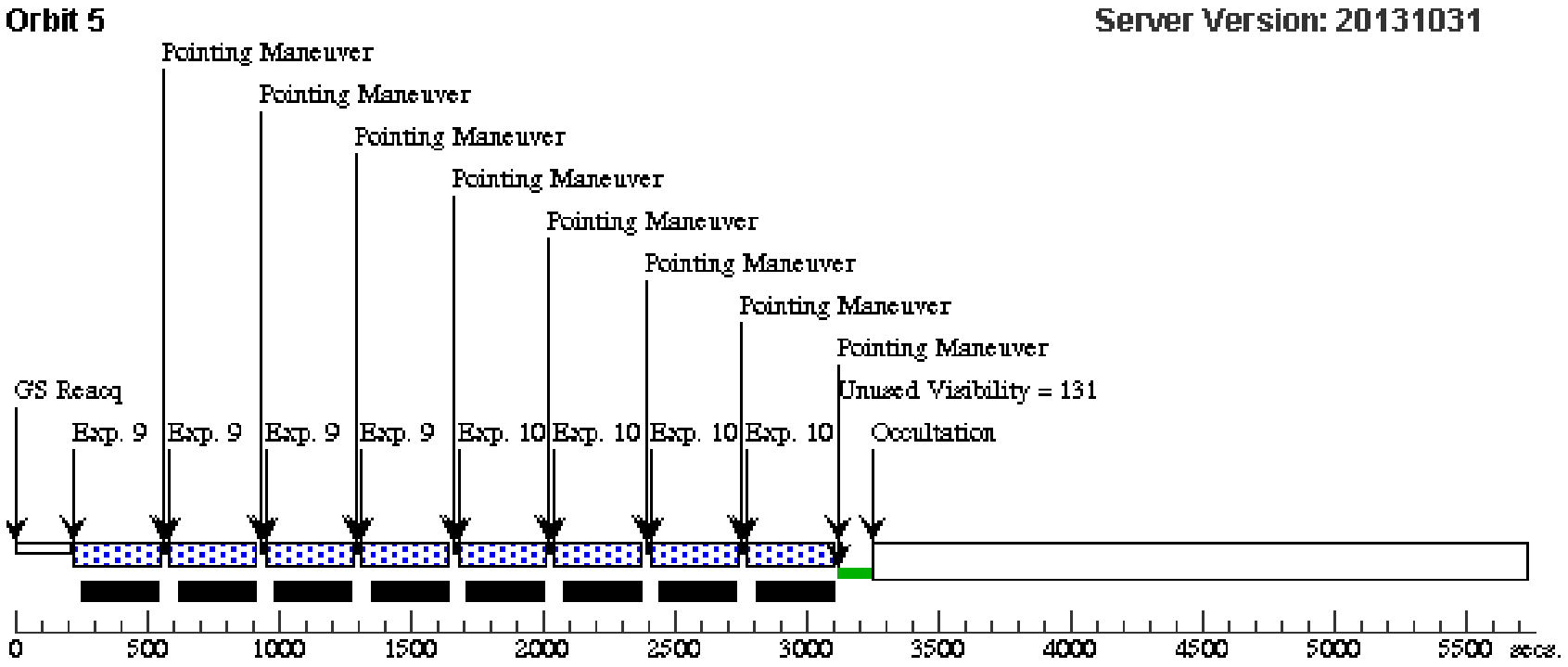
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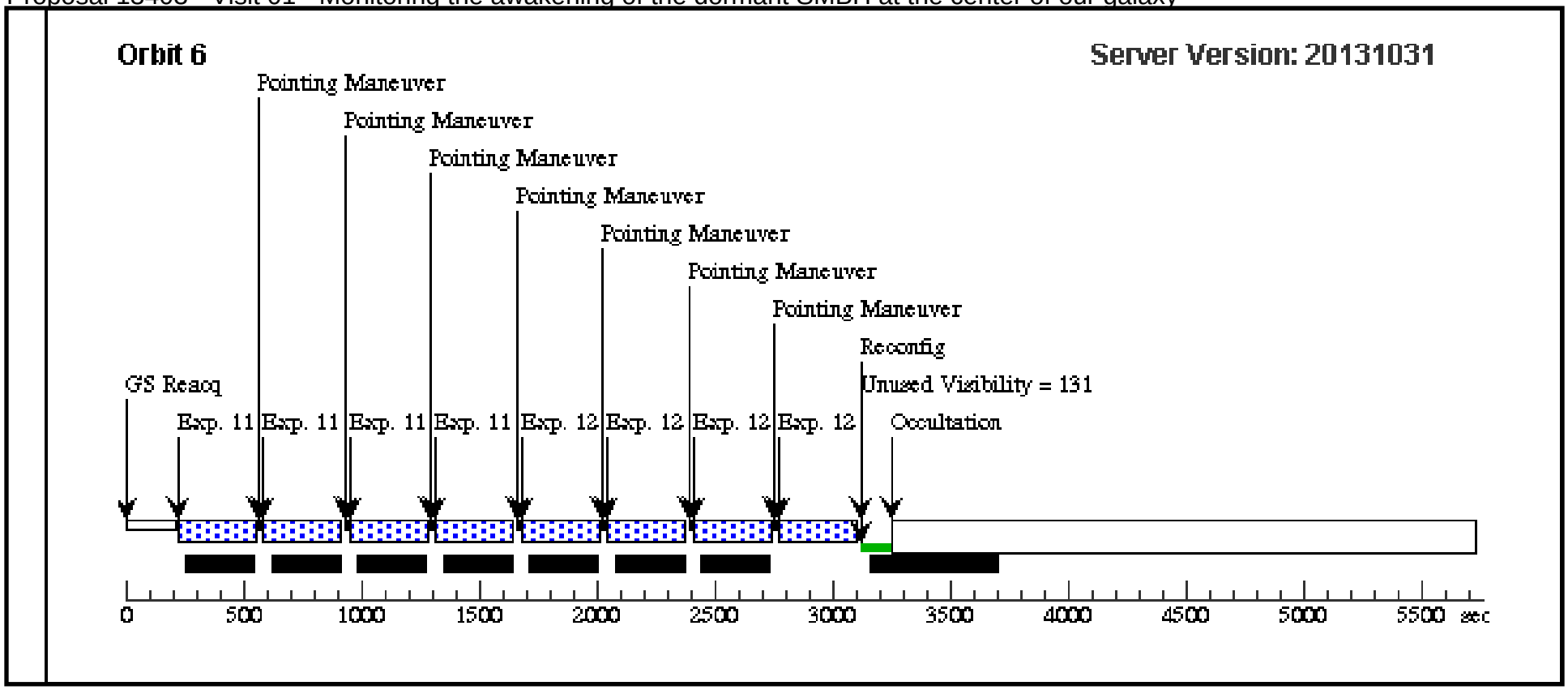
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