16060 - Tight surveillance of the exemplary O star zeta Ophiuchi with XMM-Newton and HST

Cycle: 27, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

Name	*Institution*	*E-Mail*
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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) -ZET-OPH WAVE	STIS/CCD STIS/FUV-MAMA	5	24-Sep-2020 14:00:38.0	yes
02	(1) -ZET-OPH WAVE	STIS/CCD STIS/FUV-MAMA	5	24-Sep-2020 14:00:41.0	yes
03	(1) -ZET-OPH WAVE	STIS/CCD STIS/FUV-MAMA	5	24-Sep-2020 14:00:44.0	yes
04	(1) -ZET-OPH WAVE	STIS/CCD STIS/FUV-MAMA	3	24-Sep-2020 14:00:46.0	yes

18 Total Orbits Used

ABSTRACT

We propose a novel and decisive experiment that relies on the unrivaled joint capabilities of XMM and HST. The closest O-type star, zeta Oph, shall be observed continuously over its rotational period to reveal the physics of stellar wind heating. We will discriminate between alternative models for X-ray production in O stars: the hot plasma is generated either in stochastic wind shocks or in corotating interaction regions. The new superb X-ray image will probe the physical conditions in the circumstellar matter of an O star. No similar observations were performed before on a massive star. Observing zeta Oph for 80ks with XMM and 15 HST orbits will allow to study correlated X-ray and UV variability and achieve a breakthrough in our understanding of O stars.

OBSERVING DESCRIPTION

1) The program is joint with XMM-Newton to search for correlated variability in X-rays and UV.
We do not request striktly similtaneous observations, but we need to schedule them as close as possible.
Ideally, of course, would be simultaneous.
2) Following the advice, we now relaxed the grouping constrained to 7 days.
3) We request 3 groups 5 subsequent orbits each.
4) This is not the final version of phase II, please help with organizing subsequent visits such that ACQ is not performed anew each orbit.

August 2020: This is updated Phase II with optimized observational strategy

18 September 2020: t he Second Visit failed. Upon submitting a HOPR, three HST orbits were approved to partly repeat Visit 2. The three orbits should be scheduled consequently, since we monitor UV stellar widn line variability, this is important reqest for our science.

Visit

Proposal 16060, First Visit (01), completed Thu Sep 24 18:00:47 GMT 2020

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/FUV-MAMA

Special Requirements: GROUP 01,02,03 WITHIN 7D

Fixed Targets

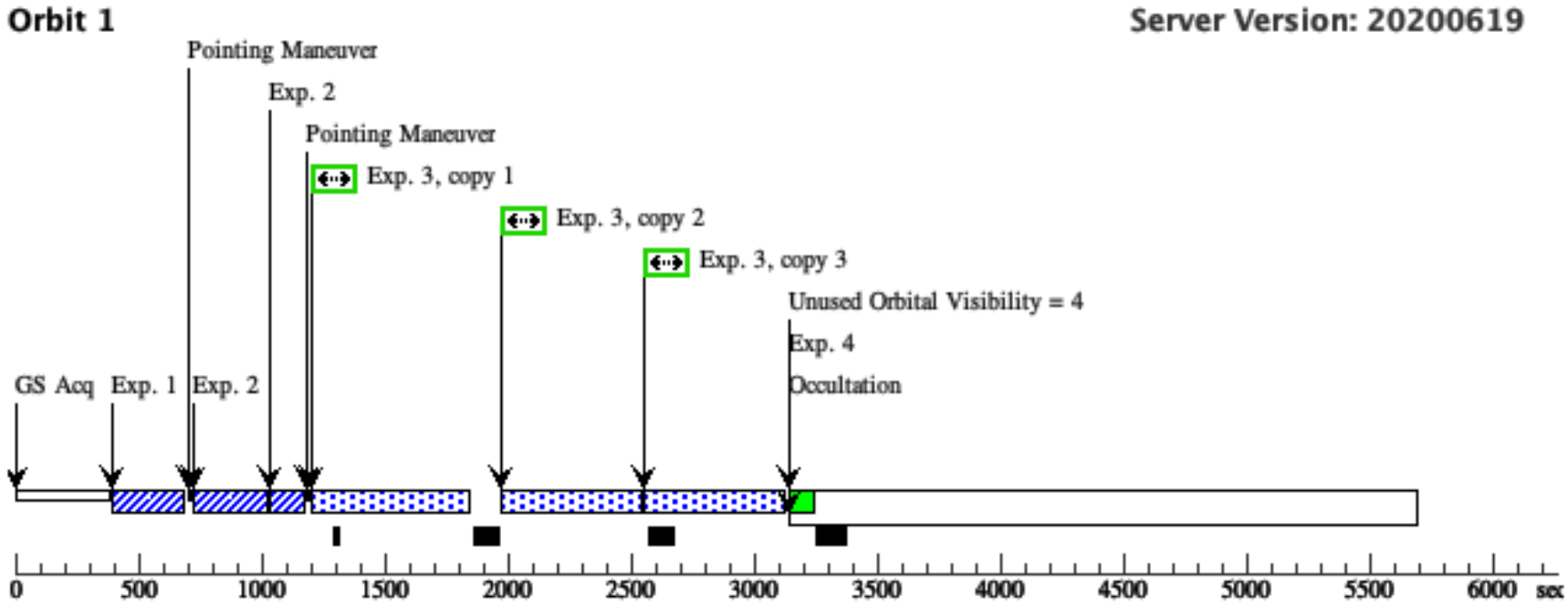
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	-ZET-OPH Alt Name1: HD149757	RA: 16 37 9.5551 (249.2898129d) Dec: -10 34 1.15 (-10.56699d) Equinox: J2000	Proper Motion RA: 0.0010348837370588635 sec of time/yr Proper Motion Dec: 0.02479 arcsec/yr Epoch of Position: 2015.5	V=2.56	Reference Frame: ICRS

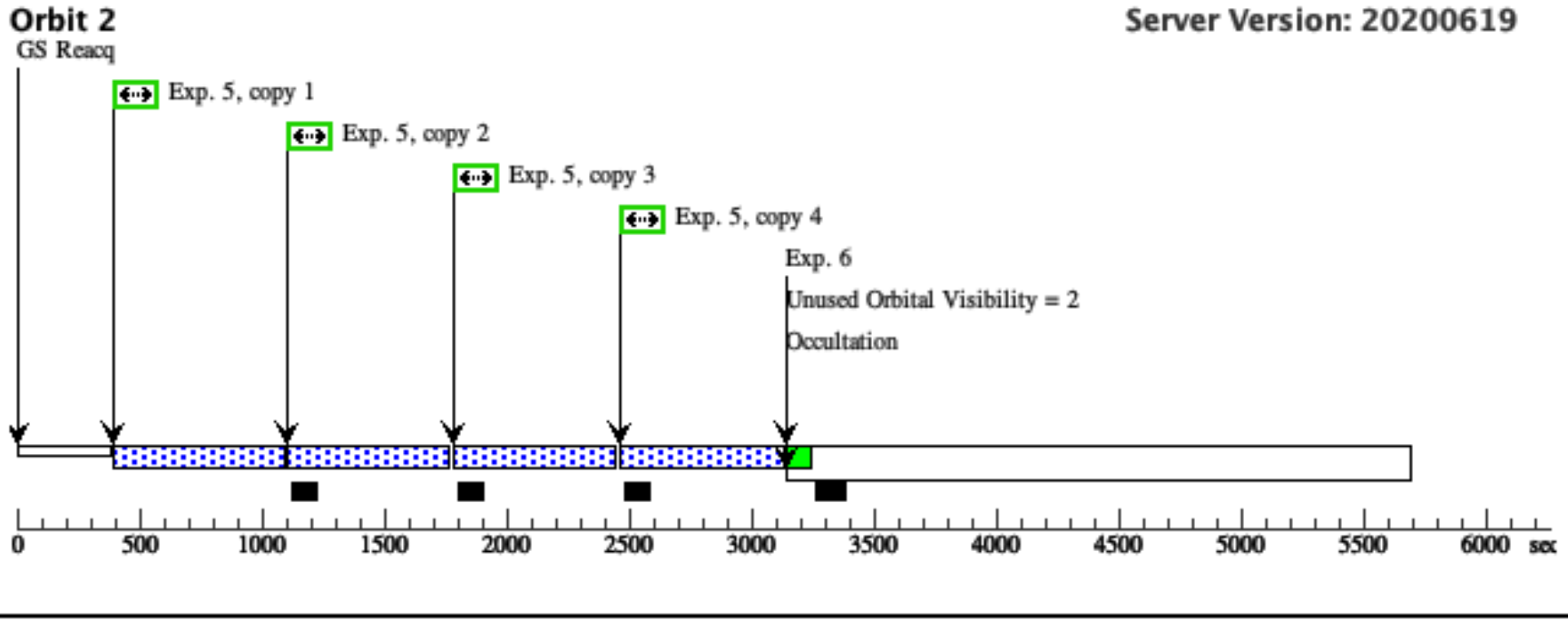
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[OE]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.143 1041)	(1) -ZET-OPH	STIS/CCD, ACQ, F25ND5	MIRROR				1 Secs (1 Secs) *[==>]*	*[1]*
2	(STIS.ta.143 1050)	(1) -ZET-OPH	STIS/CCD, ACQ/PEAK, 0.2X0.05ND	MIRROR				0.1 Secs (0.1 Secs) *[==>]*	*[1]*
3	(STIS.sp.14 31086)	(1) -ZET-OPH	STIS/FUV-MAMA, ACCUM, 0.2X0.05ND	E140M 1425 A	WAVECAL=NO			560 Secs X 3 (1680 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]*	*[1]*
4		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.06	E140M 1425 A				*[==>]*	*[1]*
5	(STIS.sp.14 59803)	(1) -ZET-OPH	STIS/FUV-MAMA, ACCUM, 0.2X0.05ND	E140M 1425 A				655 Secs X 4 (2620 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	*[2]*
6		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.06	E140M 1425 A				*[==>]*	*[2]*
7	(STIS.sp.14 59803)	(1) -ZET-OPH	STIS/FUV-MAMA, ACCUM, 0.2X0.05ND	E140M 1425 A				655 Secs X 4 (2620 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	*[3]*
8		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.06	E140M 1425 A				*[==>]*	*[3]*
9	(STIS.sp.14 59803)	(1) -ZET-OPH	STIS/FUV-MAMA, ACCUM, 0.2X0.05ND	E140M 1425 A				655 Secs X 4 (2620 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	*[4]*
10		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.06	E140M 1425 A				*[==>]*	*[4]*
11	(STIS.sp.14 59803)	(1) -ZET-OPH	STIS/FUV-MAMA, ACCUM, 0.2X0.05ND	E140M 1425 A				655 Secs X 4 (2620 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	*[5]*
12		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.06	E140M 1425 A				*[==>]*	*[5]*

Orbit Structure

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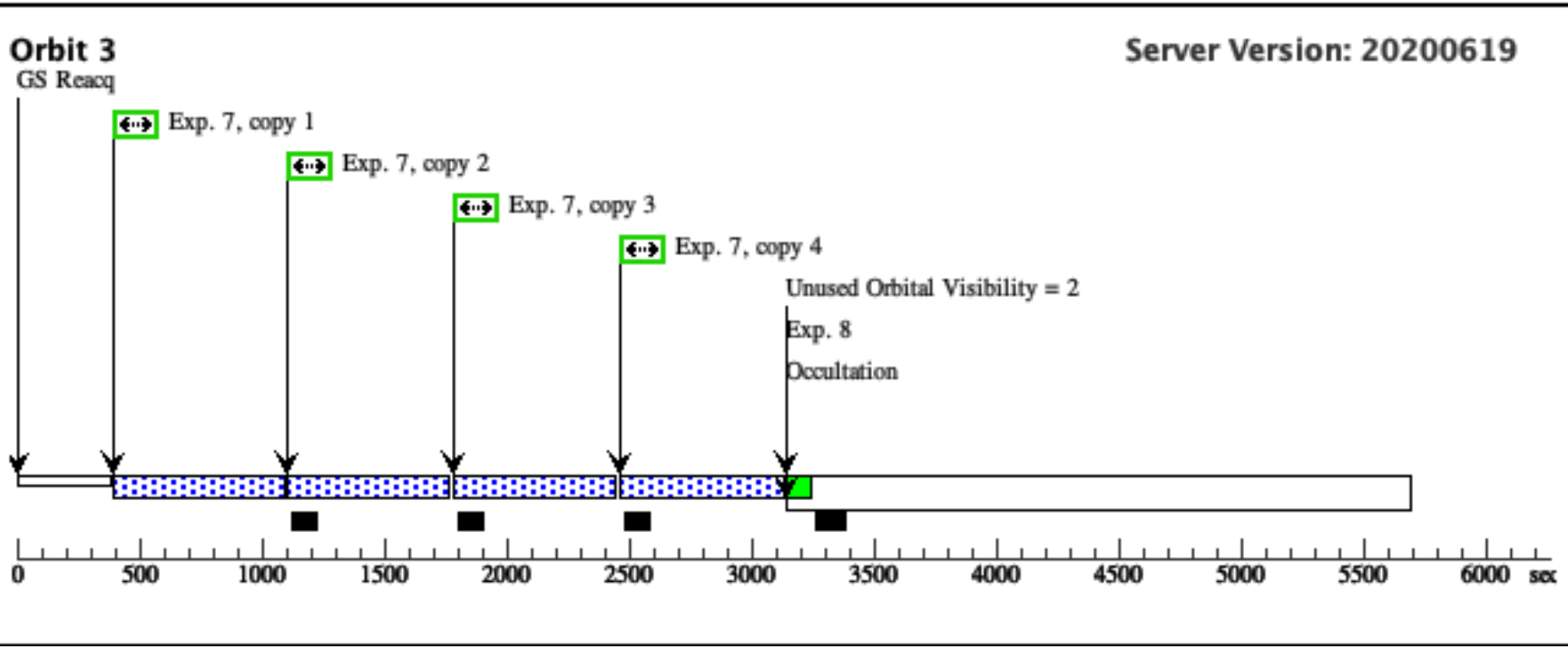
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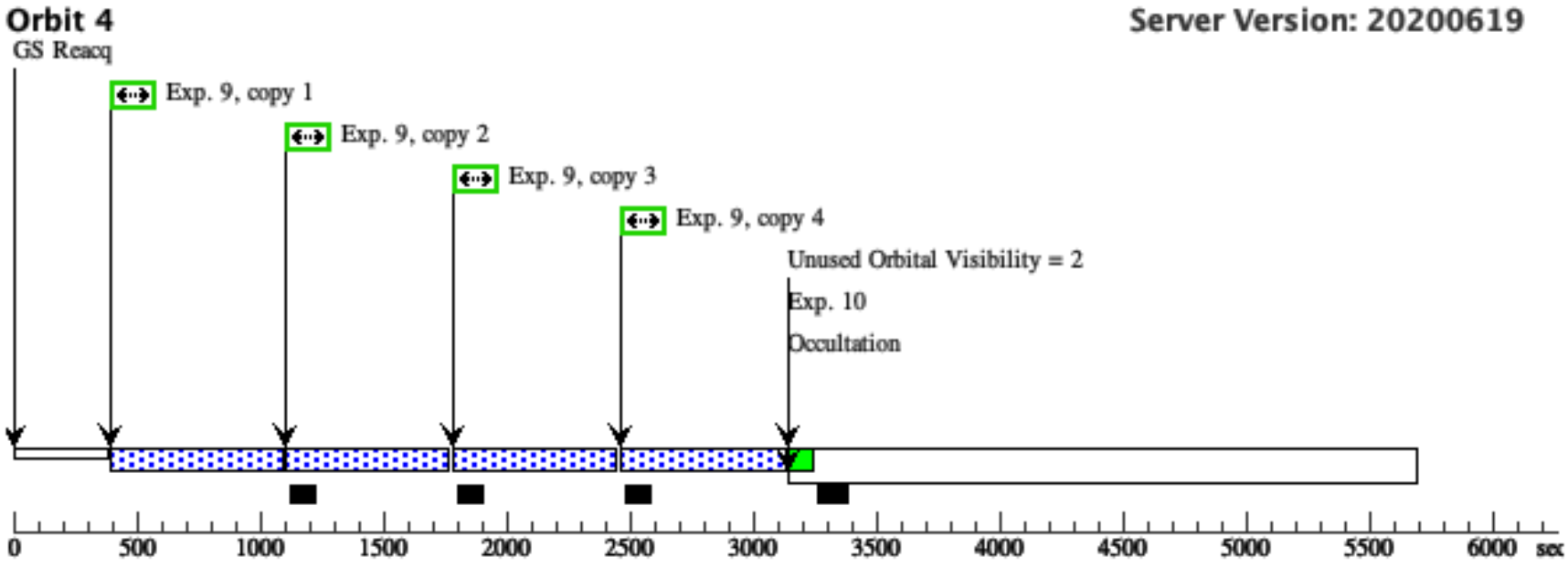
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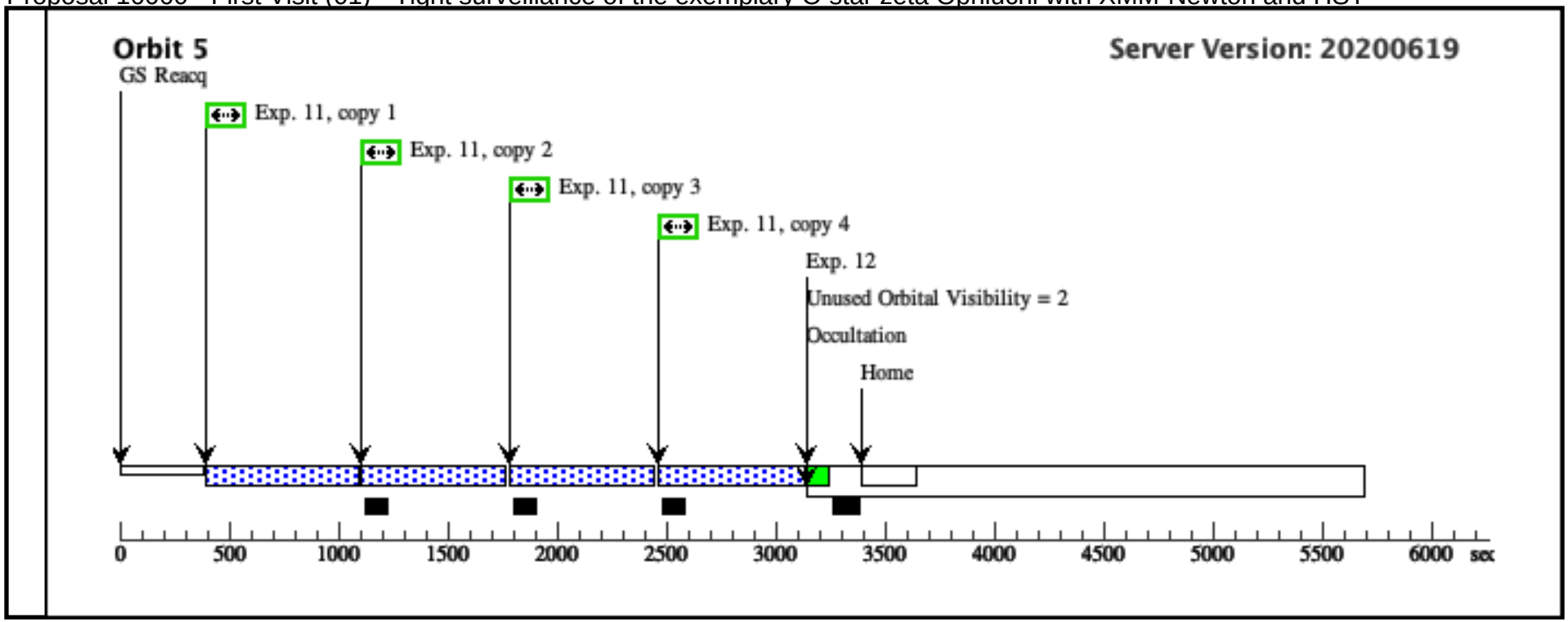
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Occultation
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Visit

Proposal 16060, Second Visit (02), failed Thu Sep 24 18:00:48 GMT 2020

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/FUV-MAMA

Special Requirements: GROUP 02,01,03 WITHIN 7D

Fixed Targets

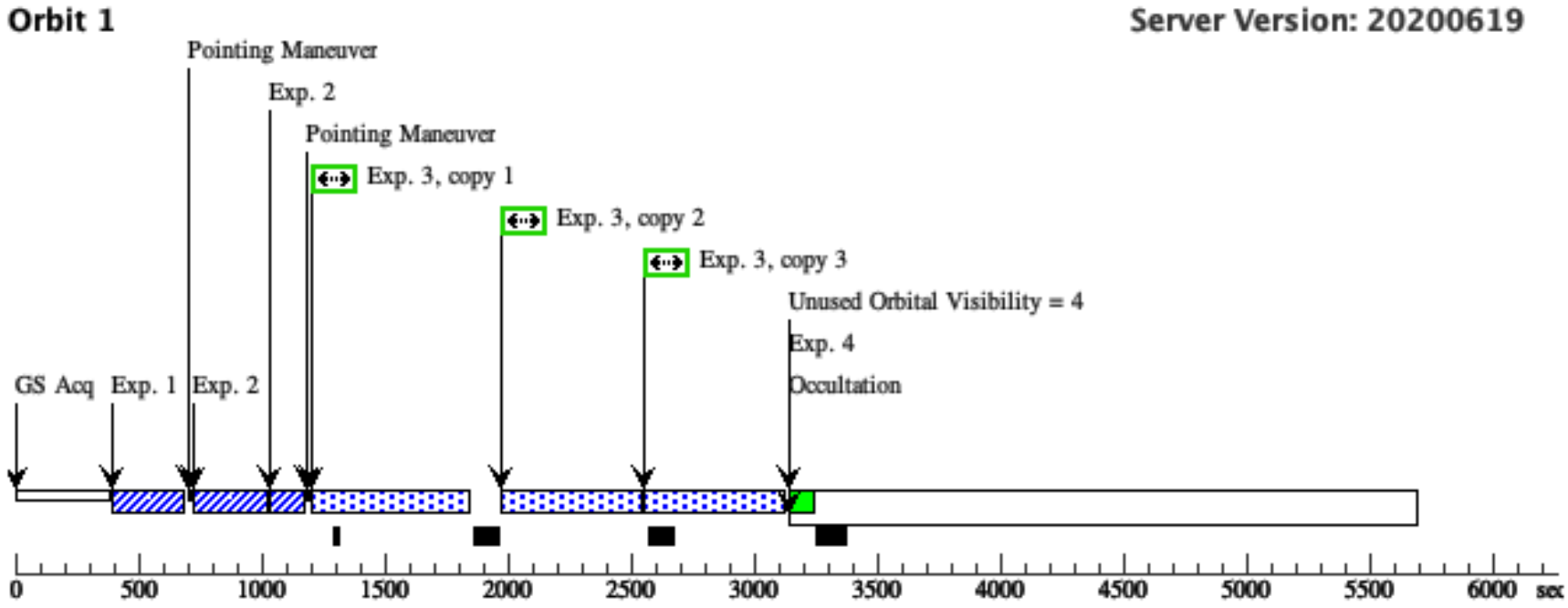
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	-ZET-OPH Alt Name1: HD149757	RA: 16 37 9.5551 (249.2898129d) Dec: -10 34 1.15 (-10.56699d) Equinox: J2000	Proper Motion RA: 0.0010348837370588635 sec of time/yr Proper Motion Dec: 0.02479 arcsec/yr Epoch of Position: 2015.5	V=2.56	Reference Frame: ICRS

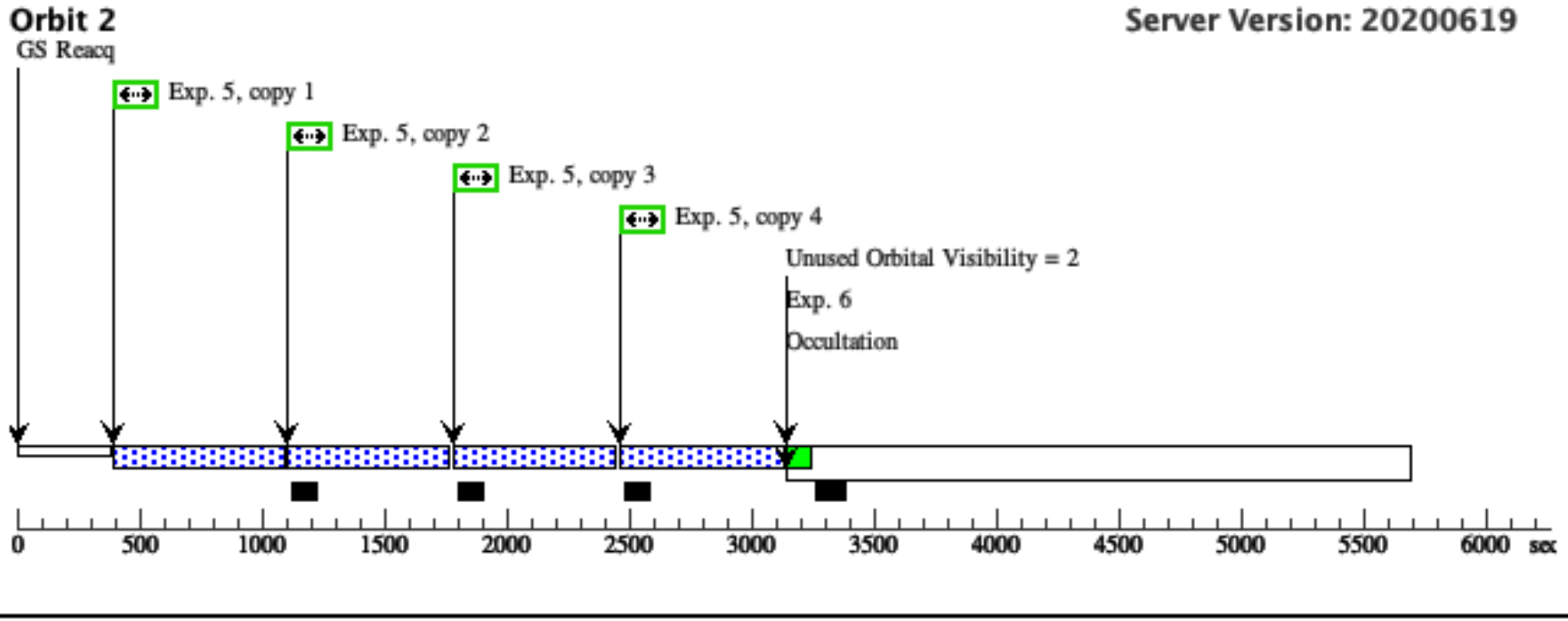
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[OE]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.1431041)	(1) -ZET-OPH	STIS/CCD, ACQ, F25ND5	MIRROR				1 Secs (1 Secs) *[==>]*	***[1]***
2	(STIS.ta.1431050)	(1) -ZET-OPH	STIS/CCD, ACQ/PEAK, 0.2X0.05ND	MIRROR				0.1 Secs (0.1 Secs) *[==>]*	***[1]***
3	(STIS.sp.1431086)	(1) -ZET-OPH	STIS/FUV-MAMA, ACCUM, 0.2X0.05ND	E140M 1425 A	WAVECAL=NO			560 Secs X 3 (1680 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]*	***[1]***
4		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.06	E140M 1425 A				*[==>]*	***[1]***
5	(STIS.sp.1459803)	(1) -ZET-OPH	STIS/FUV-MAMA, ACCUM, 0.2X0.05ND	E140M 1425 A				655 Secs X 4 (2620 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	***[2]***
6		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.06	E140M 1425 A				*[==>]*	***[2]***
7	(STIS.sp.1459803)	(1) -ZET-OPH	STIS/FUV-MAMA, ACCUM, 0.2X0.05ND	E140M 1425 A				655 Secs X 4 (2620 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	***[3]***
8		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.06	E140M 1425 A				*[==>]*	***[3]***
9	(STIS.sp.1459803)	(1) -ZET-OPH	STIS/FUV-MAMA, ACCUM, 0.2X0.05ND	E140M 1425 A				655 Secs X 4 (2620 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	***[4]***
10	(STIS.sp.1459803)	WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.06	E140M 1425 A				*[==>]*	***[4]***
11	(STIS.sp.1459803)	(1) -ZET-OPH	STIS/FUV-MAMA, ACCUM, 0.2X0.05ND	E140M 1425 A				655 Secs X 4 (2620 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	***[5]***
12		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.06	E140M 1425 A				*[==>]*	***[5]***

Orbit Structure

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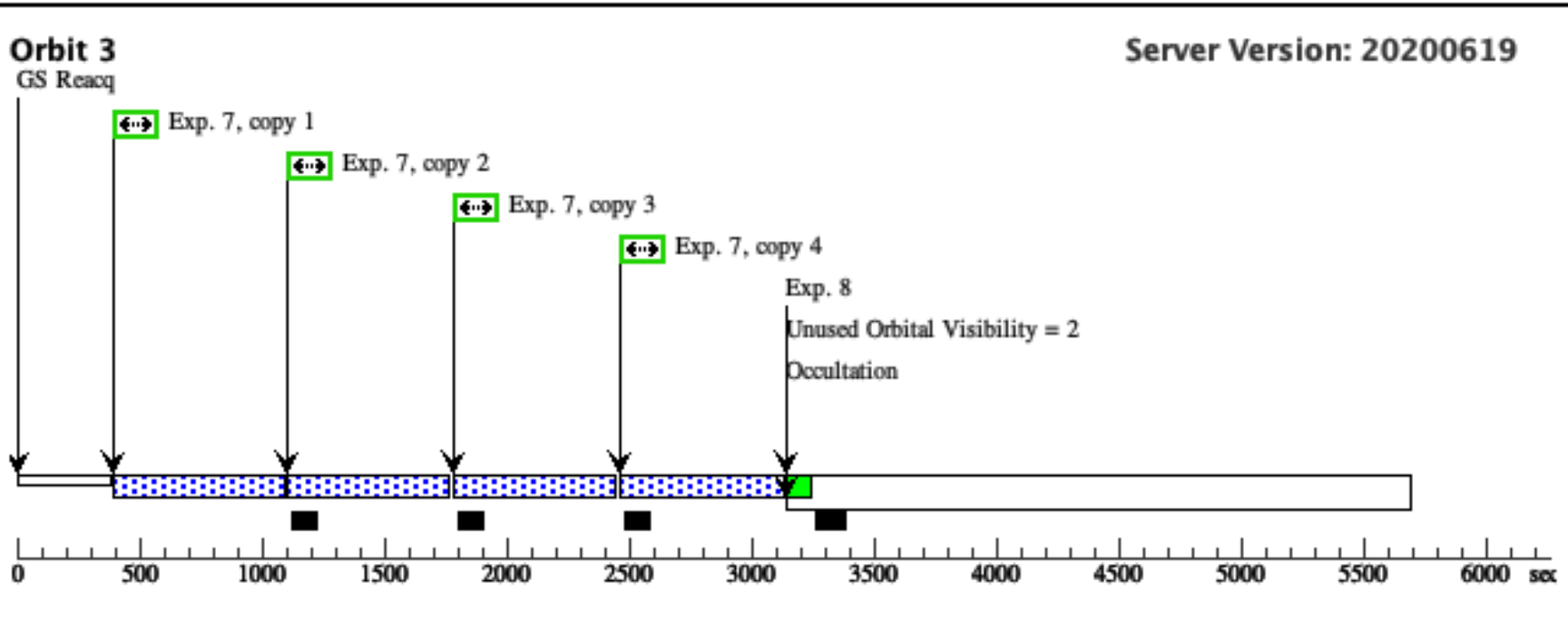
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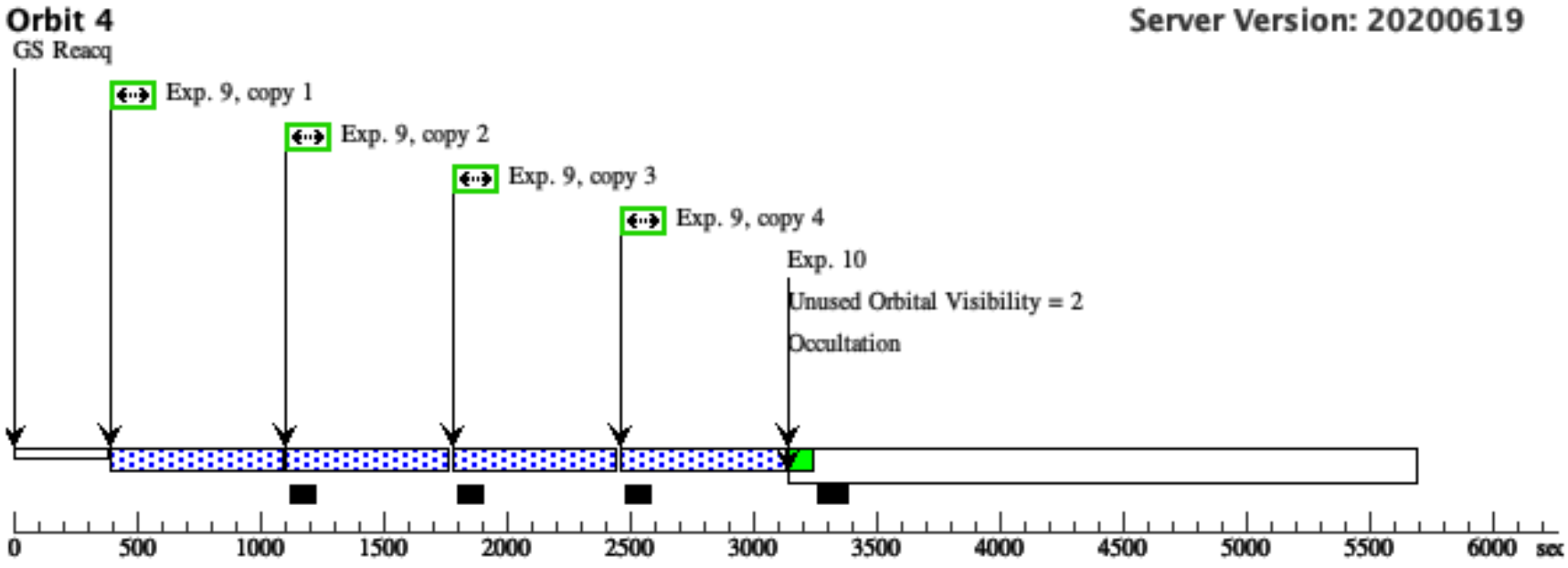
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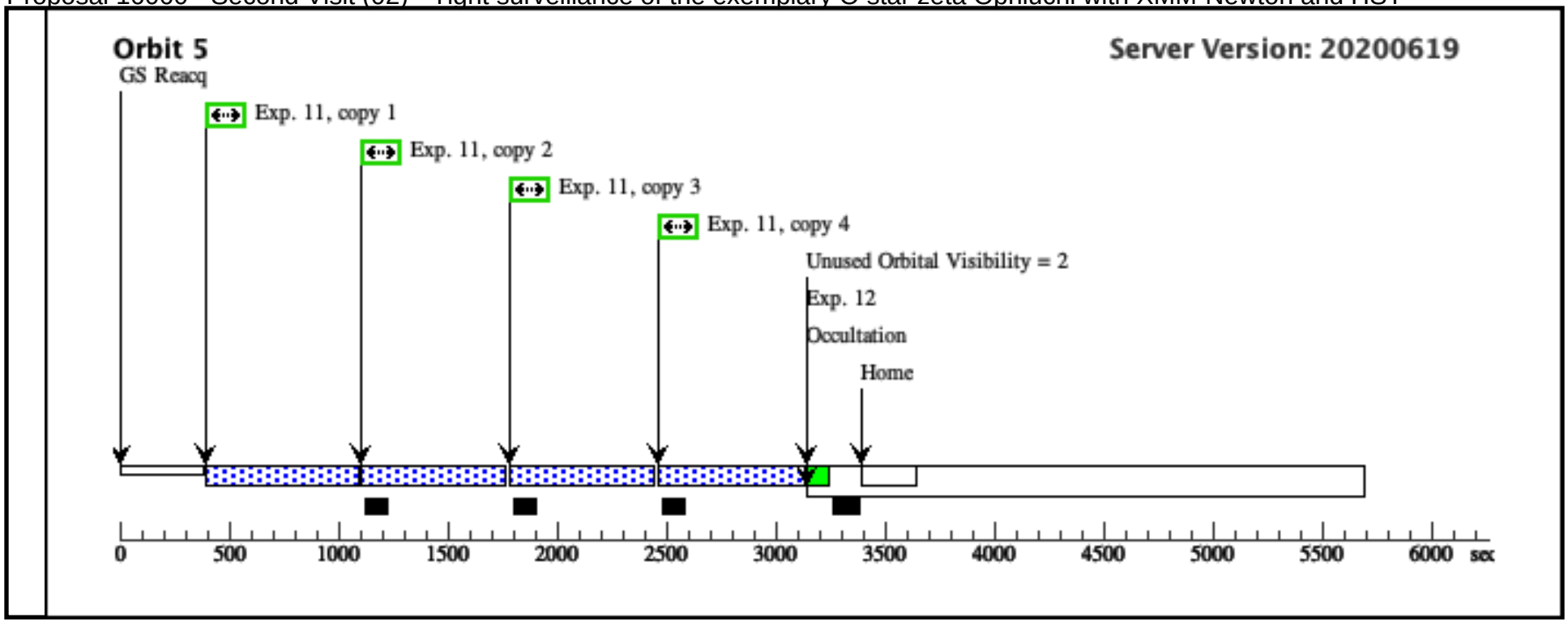
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Exp. 12
Occultation
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Visit

Proposal 16060, Third Visit (03), completed Thu Sep 24 18:00:48 GMT 2020

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/FUV-MAMA

Special Requirements: GROUP 03,01,02 WITHIN 7D

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
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Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[OE]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.1431041)	(1) -ZET-OPH	STIS/CCD, ACQ, F25ND5	MIRROR				1 Secs (1 Secs) *[==>]*	***[1]***
2	(STIS.ta.1431050)	(1) -ZET-OPH	STIS/CCD, ACQ/PEAK, 0.2X0.05ND	MIRROR				0.1 Secs (0.1 Secs) *[==>]*	***[1]***
3	(STIS.sp.1431086)	(1) -ZET-OPH	STIS/FUV-MAMA, ACCUM, 0.2X0.05ND	E140M 1425 A	WAVECAL=NO			560 Secs X 3 (1680 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]*	***[1]***
4		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.06	E140M 1425 A				*[==>]*	***[1]***
5	(STIS.sp.1459803)	(1) -ZET-OPH	STIS/FUV-MAMA, ACCUM, 0.2X0.05ND	E140M 1425 A				655 Secs X 4 (2620 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	***[2]***
6		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.06	E140M 1425 A				*[==>]*	***[2]***
7	(STIS.sp.1459803)	(1) -ZET-OPH	STIS/FUV-MAMA, ACCUM, 0.2X0.05ND	E140M 1425 A				655 Secs X 4 (2620 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	***[3]***
8		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.06	E140M 1425 A				*[==>]*	***[3]***
9	(STIS.sp.1459803)	(1) -ZET-OPH	STIS/FUV-MAMA, ACCUM, 0.2X0.05ND	E140M 1425 A				655 Secs X 4 (2620 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	***[4]***
10		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.06	E140M 1425 A				*[==>]*	***[4]***
11	(STIS.sp.1459803)	(1) -ZET-OPH	STIS/FUV-MAMA, ACCUM, 0.2X0.05ND	E140M 1425 A				655 Secs X 4 (2620 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	***[5]***
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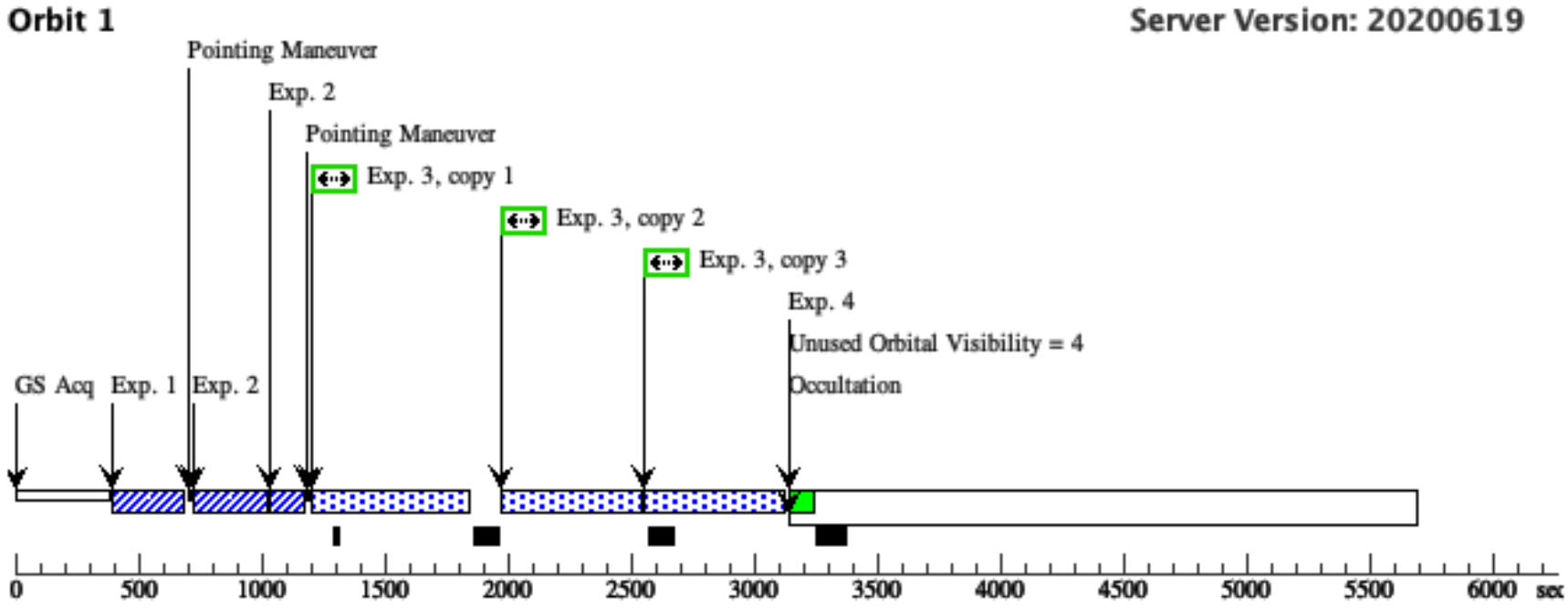
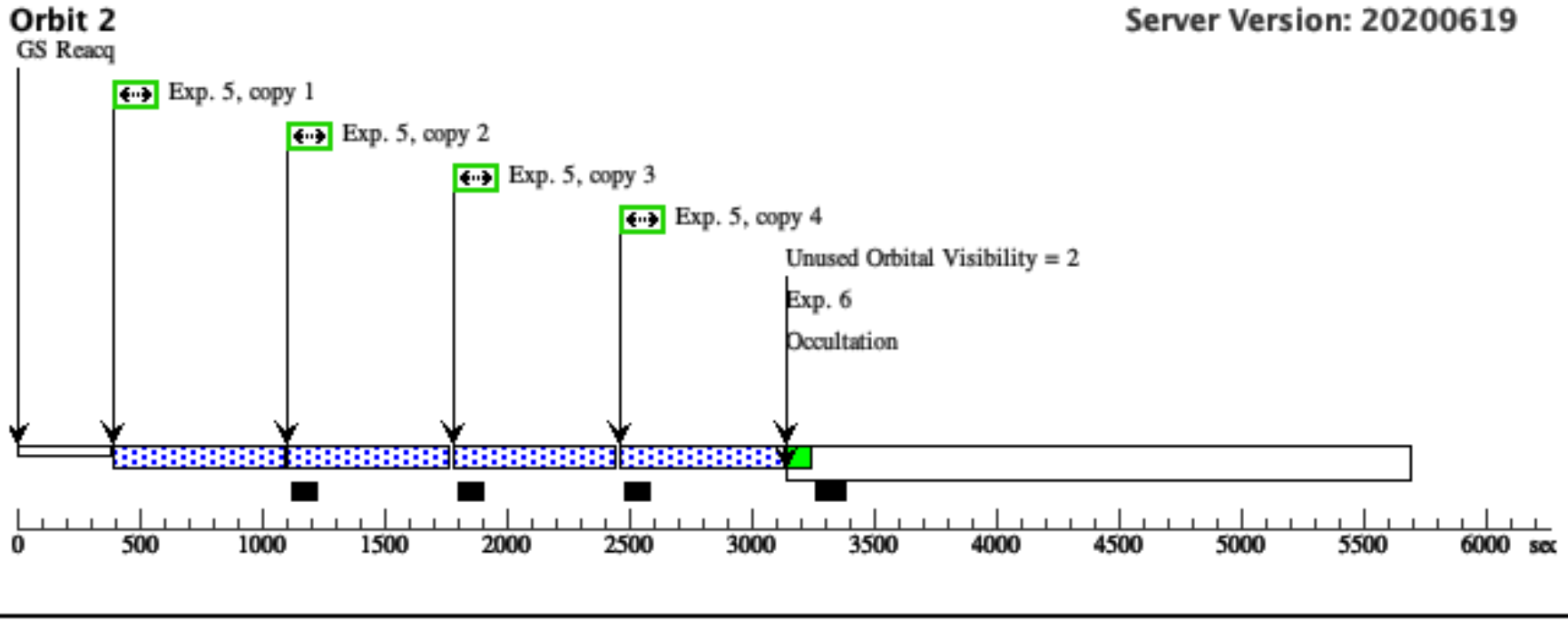
Orbit Structure

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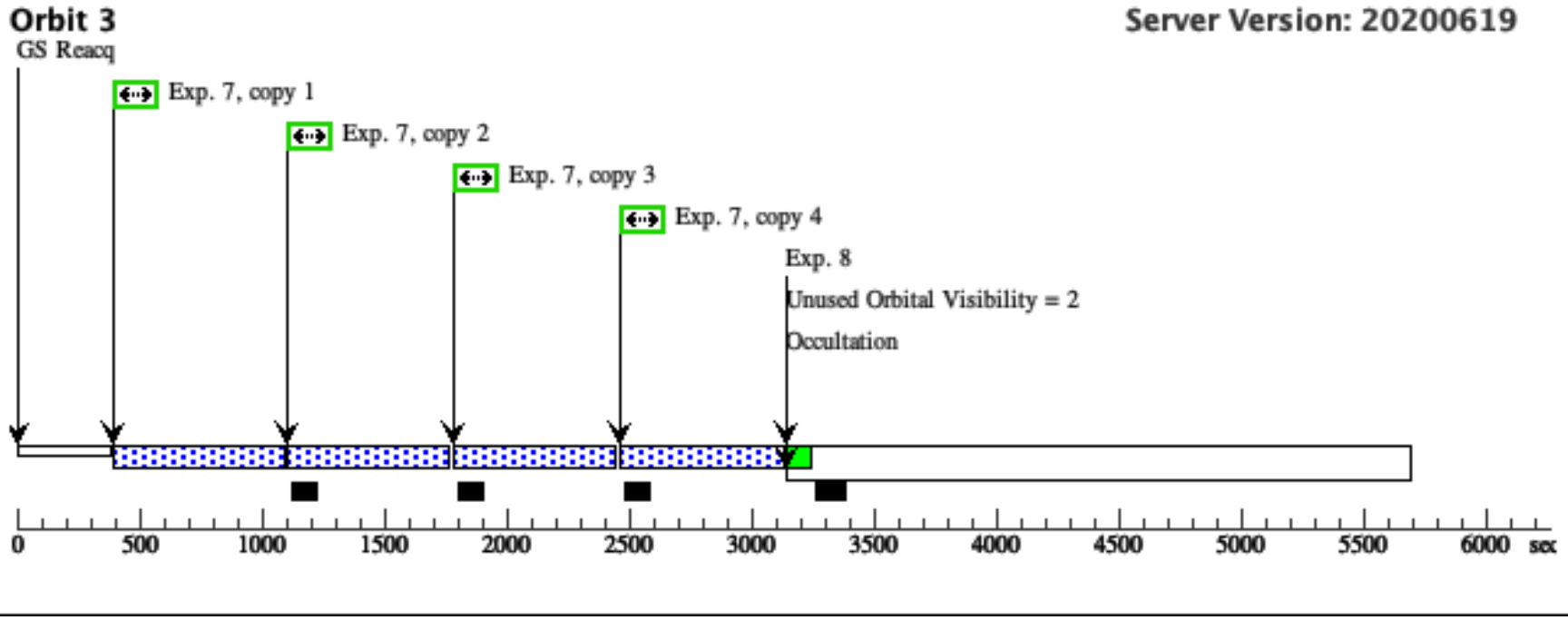
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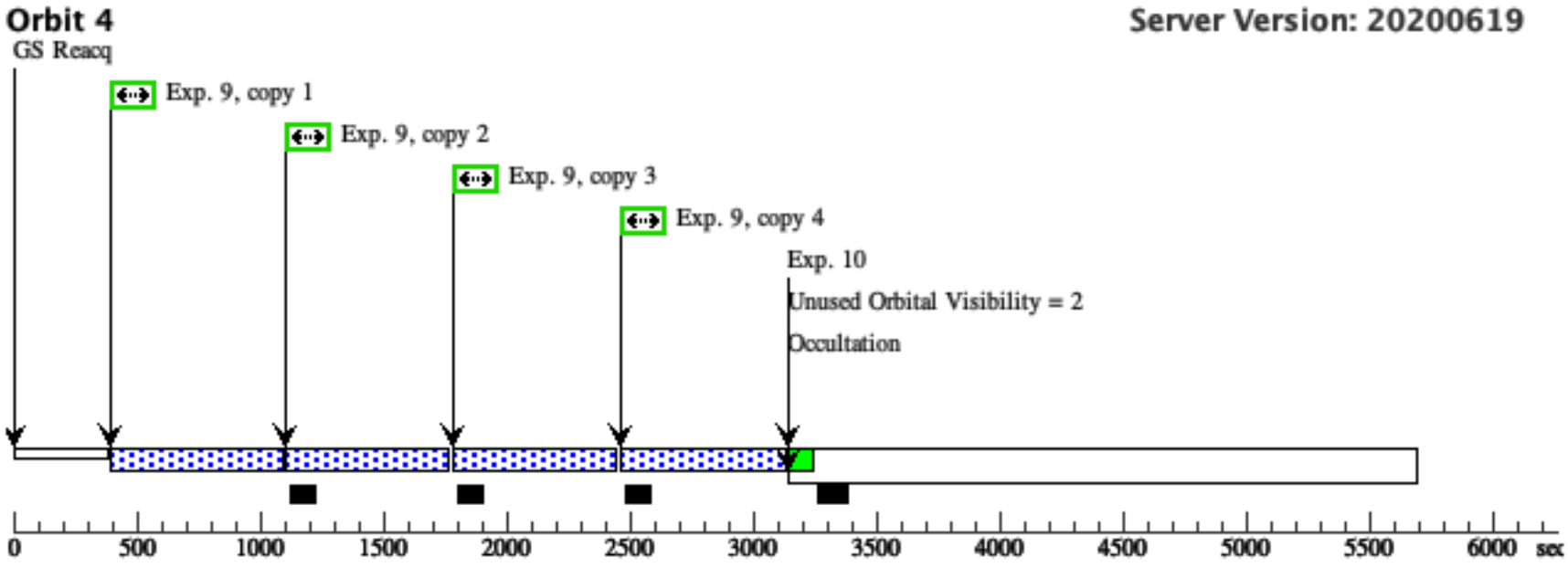
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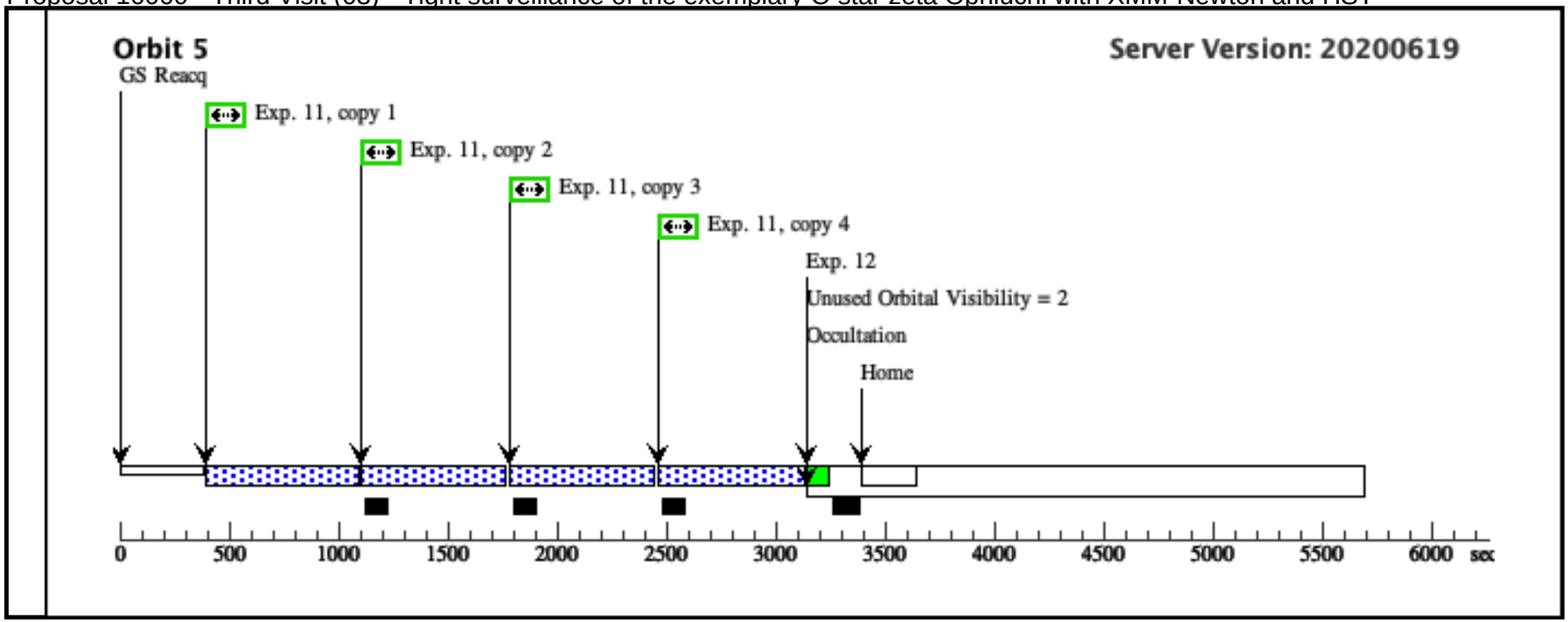
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Occultation
Home
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sec

Visit

Proposal 16060, Approved HOPR (04), implementation Thu Sep 24 18:00:48 GMT 2020

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/FUV-MAMA

Special Requirements: (none)

Fixed Targets

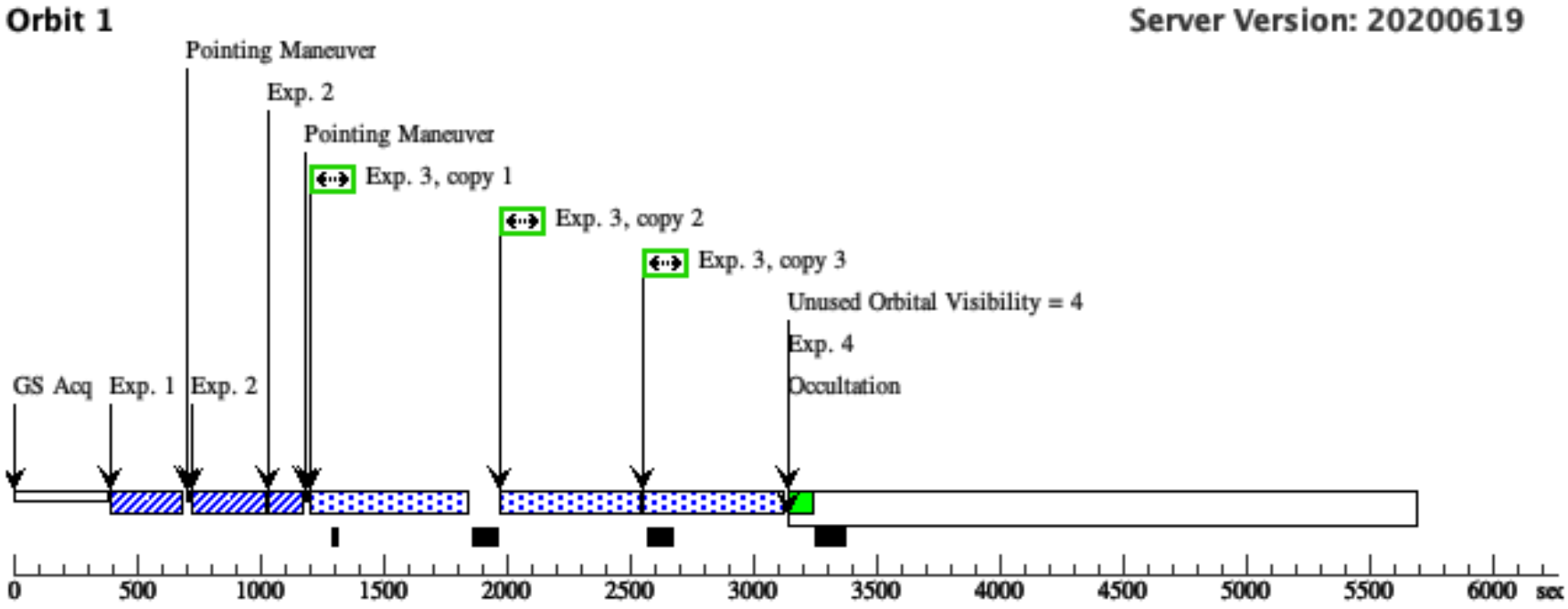
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	-ZET-OPH Alt Name1: HD149757	RA: 16 37 9.5551 (249.2898129d) Dec: -10 34 1.15 (-10.56699d) Equinox: J2000	Proper Motion RA: 0.0010348837370588635 sec of time/yr Proper Motion Dec: 0.02479 arcsec/yr Epoch of Position: 2015.5	V=2.56	Reference Frame: ICRS

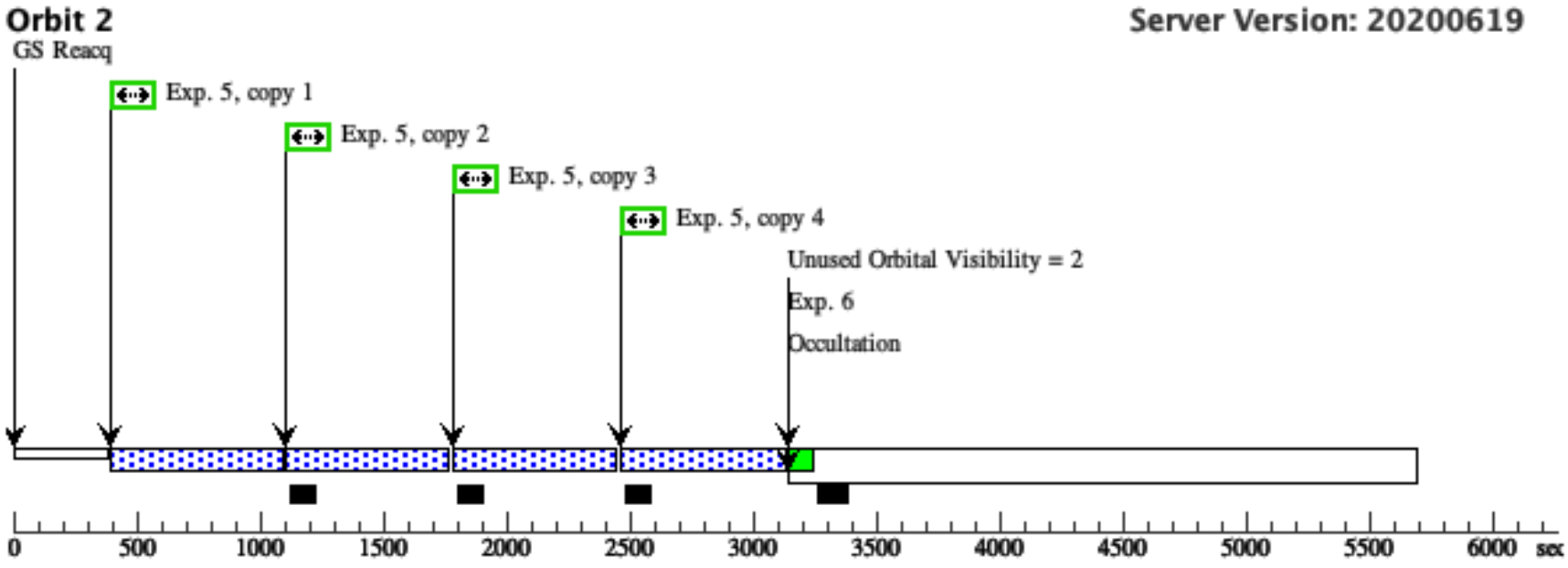
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=STAR
Description=[OE]
Extended=NO

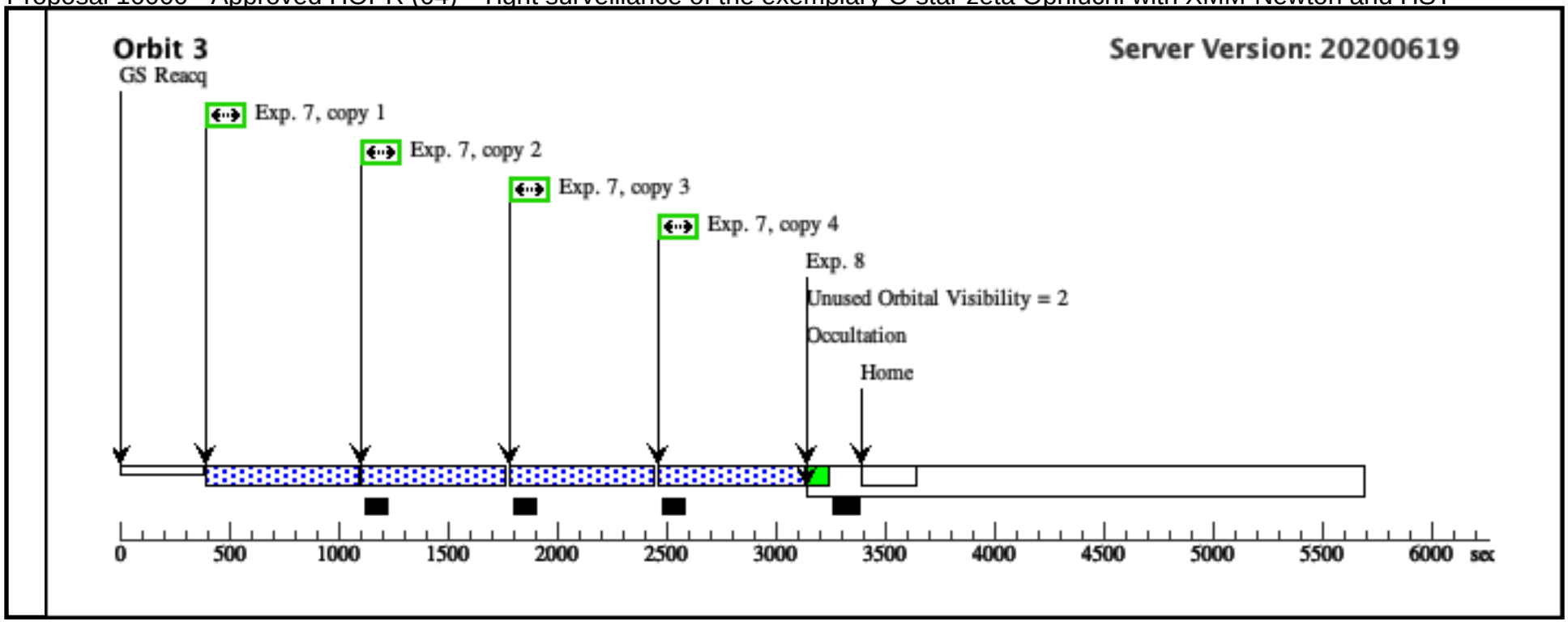
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.1431041)	(1) -ZET-OPH	STIS/CCD, ACQ, F25ND5	MIRROR				1 Secs (1 Secs) *[==>]*	***[1]***
2	(STIS.ta.1431050)	(1) -ZET-OPH	STIS/CCD, ACQ/PEAK, 0.2X0.05ND	MIRROR				0.1 Secs (0.1 Secs) *[==>]*	***[1]***
3	(STIS.sp.1431086)	(1) -ZET-OPH	STIS/FUV-MAMA, ACCUM, 0.2X0.05ND	E140M 1425 A	WAVECAL=NO			560 Secs X 3 (1680 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]*	***[1]***
4		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.06	E140M 1425 A				*[==>]*	***[1]***
5	(STIS.sp.1459803)	(1) -ZET-OPH	STIS/FUV-MAMA, ACCUM, 0.2X0.05ND	E140M 1425 A				655 Secs X 4 (2620 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	***[2]***
6		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.06	E140M 1425 A				*[==>]*	***[2]***
7	(STIS.sp.1459803)	(1) -ZET-OPH	STIS/FUV-MAMA, ACCUM, 0.2X0.05ND	E140M 1425 A				655 Secs X 4 (2620 Secs) *[==>(Copy 1)]* *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]*	***[3]***
8		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.06	E140M 1425 A				*[==>]*	***[3]***

Orbit Structure




Orbit 2
Server Version: 20200619
GS Reacq
Exp. 5, copy 1
Exp. 5, copy 2
Exp. 5, copy 3
Exp. 5, copy 4
Unused Orbital Visibility = 2
Exp. 6
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec


Orbit 3
Server Version: 20200619
GS Reacq
Exp. 7, copy 1
Exp. 7, copy 2
Exp. 7, copy 3
Exp. 7, copy 4
Exp. 8
Unused Orbital Visibility = 2
Occultation
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec