17716 - Probing Multiphase Cooling Via OVI Emission in the Cores of the Most Extreme Cooling Flows

Cycle: 32, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

Name	*Institution*
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Dr. Marios Chatzikos (CoI)	University of Kentucky
Dr. Taweewat Somboonpanyakul (CoI)	Chulalongkorn University
Michael S. Calzadilla (CoI)	Smithsonian Institution Astrophysical Observatory

VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) ABELL1835-STAR (2) ABELL1835	COS/FUV COS/NUV	5	05-Nov-2024 18:00:31.0	yes
02	(3) MACS1931-STAR (4) MACS1931.8-2634	COS/FUV COS/NUV	3	05-Nov-2024 18:00:32.0	yes
03	(3) MACS1931-STAR (4) MACS1931.8-2634	COS/FUV COS/NUV	3	05-Nov-2024 18:00:33.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
04	(5) CHIPS1911-STAR (6) CHIPS1911+4455	COS/FUV COS/NUV	4	05-Nov-2024 18:00:34.0	yes
05	(5) CHIPS1911-STAR (6) CHIPS1911+4455	COS/FUV COS/NUV	3	05-Nov-2024 18:00:35.0	yes
06	(5) CHIPS1911-STAR (6) CHIPS1911+4455	COS/FUV COS/NUV	3	05-Nov-2024 18:00:37.0	yes
07	(5) CHIPS1911-STAR (6) CHIPS1911+4455	COS/FUV COS/NUV	3	05-Nov-2024 18:00:38.0	yes

24 Total Orbits Used

ABSTRACT

The cores of galaxy clusters represent one of the few places in the Universe where large-scale cooling and feedback processes can be readily observed. Unlike isolated galaxies, where some of the energy injected into the ISM from the AGN often escapes into the low-density IGM, the denser ICM in cluster cores retains an imprint of this feedback in the form of bubbles or ripples. Similarly, the accretion of hot gas from the IGM onto isolated galaxies is challenging to observe due to the very low densities, while such phenomena have been studied in depth for decades in galaxy clusters. These so-called "cooling flows" in galaxy clusters, which were once thought to be massive flows of cool gas on the order of hundreds of Msun/yr, are now understood to be considerably less massive, with AGN feedback preventing the majority of the gas from cooling. Despite significant progress, the details of the cooling/feedback cycle still elude us. One of the most promising paths forward is the use of the OVI emission line, probing 10^5.5K gas, to detect the multi-phase cooling flow. This line should be especially sensitive to the instantaneous cooling rate of the hot gas, compared to lines in the X-ray. Here we propose to target the three most strongly cooling clusters in the known universe that do not also harbor central QSOs, with a goal of measuring the instantaneous cooling rate in these clusters. This program would double the number of OVI detections in non-QSO clusters, providing critical constraints for subgrid models of AGN feedback in simulations, providing a measurement of the level of turbulence in the cooling gas, and constraining the age of the cooling-fed starburst.

OBSERVING DESCRIPTION

The primary goal of this program is to obtain spectra of the OVI (1032,1038) doublet in three giant elliptical galaxies, which will be redshifted to 1291-1532A, depending on the source. Our secondary goal is to obtain broad UV continuum coverage.

We are targeting relatively diffuse/clumpy regions. Thus, pointing revision via ACQ/SEARCH is not possible. We instead must center on a nearby star (<60" away) in all cases and perform offsets. According to the COS users manual, such offsets should be accurate enough for our purposes. We have identified stars that are bright in the bluest HST band that is available, and are using their GAIA positions as a starting point.

All of our observations are done in TIME-TAG mode. This temporal sampling will allow us to exclude poor quality data and get improved thermal correction and background removal. We separate our visits into 4+ orbits, cycling through FP-POS with each new visit. This observing strategy is adopted to reduce the fixed pattern noise and fill up the wavelength hole produced by the chip gap without excessive overheads.

Since our targets are faint (<0.001 cts/s), we use a BUFFER-TIME equal to the exposure time minus 110s, as suggested by Julia Duval for a similar 2012 program.

We choose our central wavelengths in order to keep the OVI line (1032,1038A rest frame) as far from the chip gap as possible. We are open to suggestions on this, if we are pushing the line into a low-sensitivity regime.

Visit

Proposal 17716, Visit 01, implementation Tue Nov 05 23:00:39 GMT 2024

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

Diagnostics

(Visit 01) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS

(Abell1835-on (01.002)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

(Abell1835-on (01.003)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

(Abell1835-on (01.004)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

(Abell1835-on (01.005)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

(Abell1835-on (01.006)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

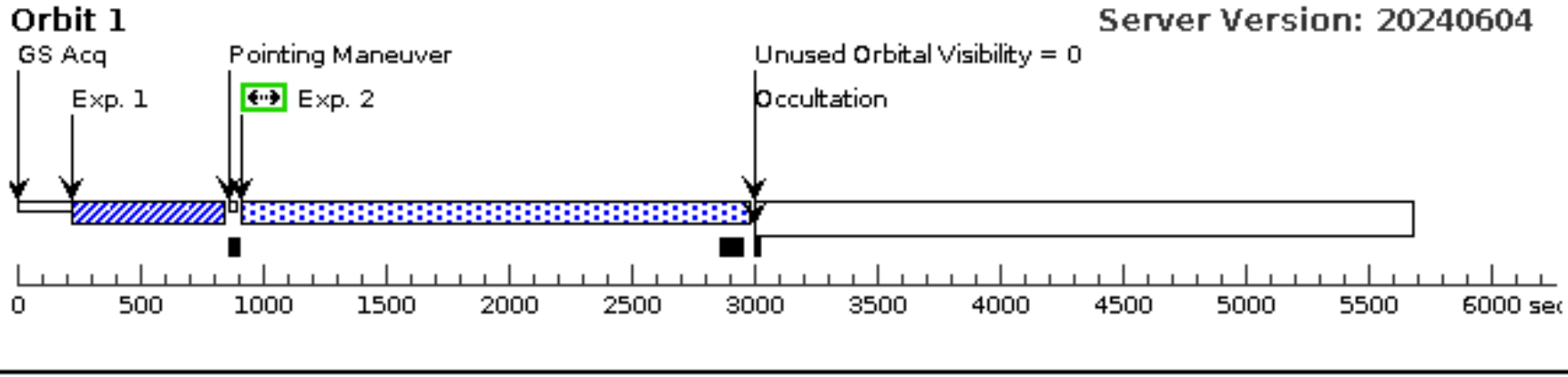
Fixed Targets

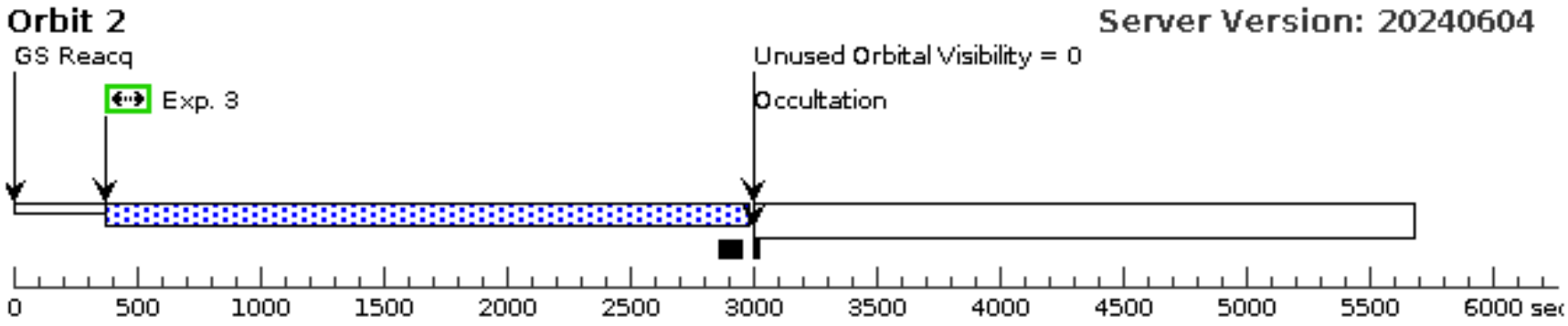
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	ABELL1835-STAR	RA: 14 01 1.8753 (210.2578137d) Dec: +02 52 1.15 (2.86699d) Equinox: J2000	Proper Motion RA: 6.482 mas/yr Proper Motion Dec: -6.287 mas/yr Epoch of Position: 2016	V=20	Reference Frame: ICRS
Comments: *Category=STAR* *Description=[UNDESIGNATED]* *Extended=NO*					
(2)	ABELL1835	Offset from ABELL1835-STAR RA Offset: 8.01E-4 Degrees Dec Offset: 0.0114577 Degrees		V=17	Offset Position (ABELL1835)
Comments: *Category=CLUSTER OF GALAXIES* *Description=[COOLING FLOW, STAR FORMING REGION]* *Extended=YES*					

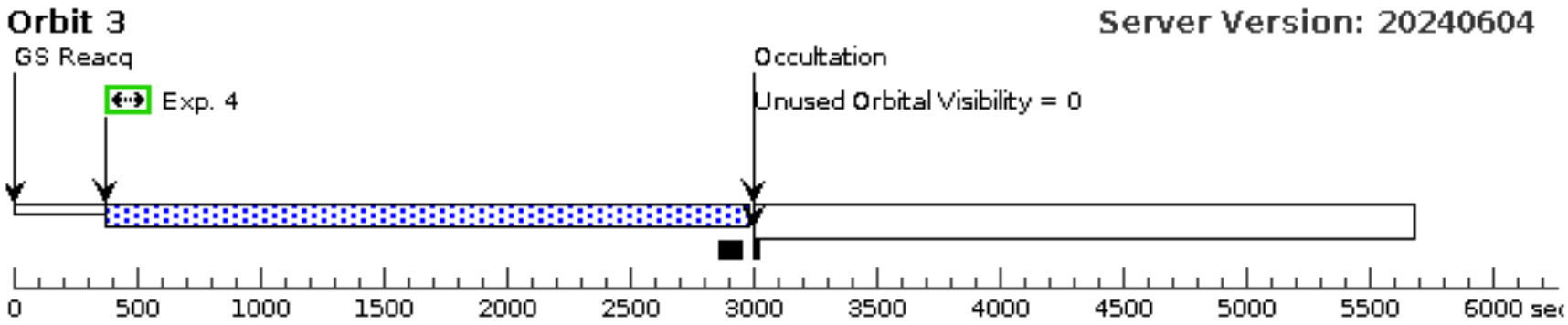
Exposures

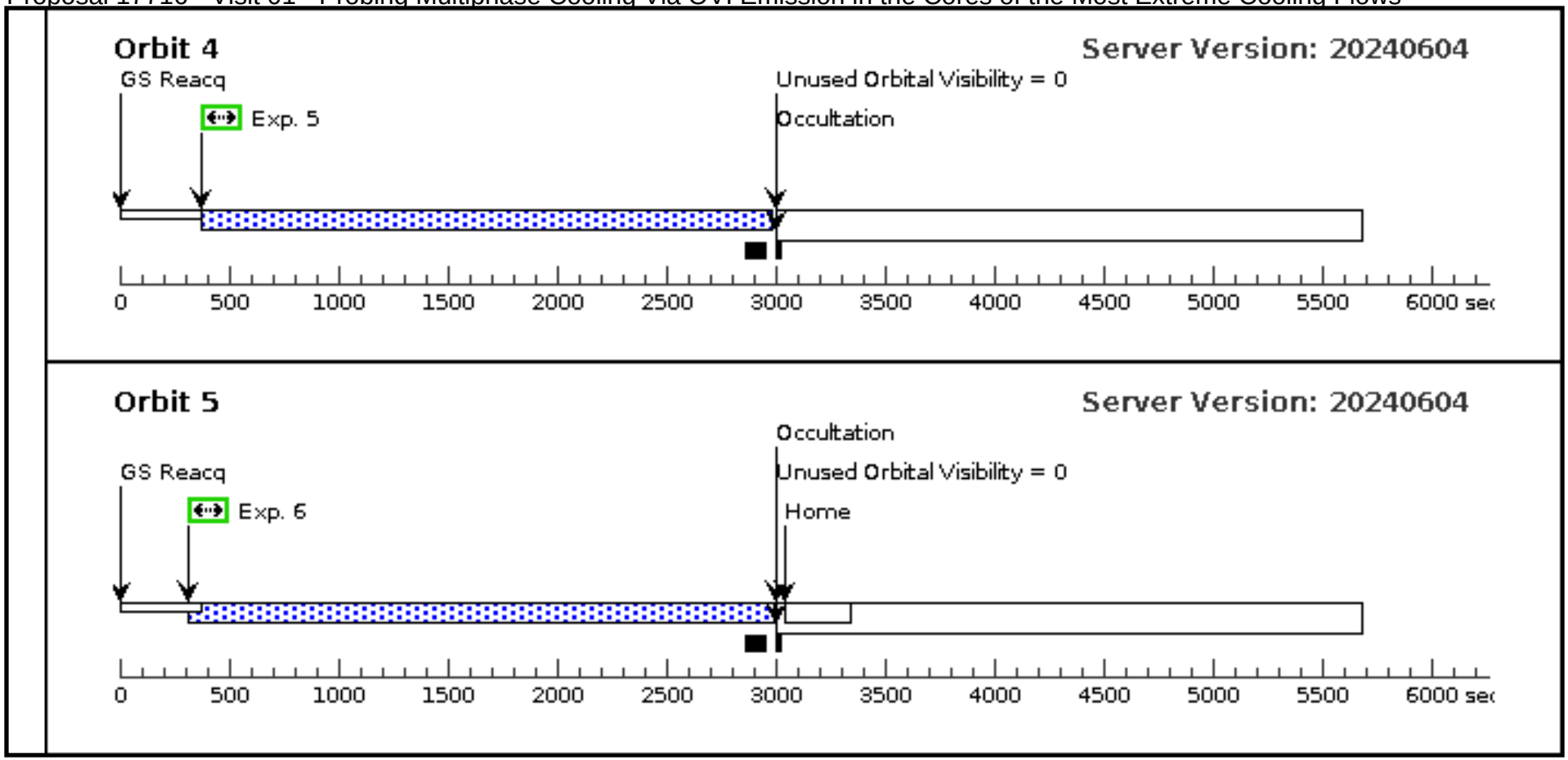
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Abell1835 Acquisition (COS.ta.1931649)	(1) ABELL1835-STAR	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				205 Secs (205 Secs) *[==>]*	***[1]***
Comments: Target star has g=19.45 AB mag, Teff=6132									
2	Abell1835-on (COS.sp.1846088)	(2) ABELL1835	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=1778; FLASH=YES; FP-POS=1; SEGMENT=BOTH			1200 Secs (1888 Secs) *[==>1888.0 Secs]*	***[1]***
3	Abell1835-on (COS.sp.1846088)	(2) ABELL1835	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=2451; FLASH=YES; FP-POS=2; SEGMENT=BOTH			2000 Secs (2561 Secs) *[==>2561.0 Secs]*	***[2]***
4	Abell1835-on (COS.sp.1846088)	(2) ABELL1835	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=2451; FLASH=YES; FP-POS=3; SEGMENT=BOTH			2000 Secs (2561 Secs) *[==>2561.0 Secs]*	***[3]***
5	Abell1835-on (COS.sp.1846088)	(2) ABELL1835	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=2451; FLASH=YES; FP-POS=4; SEGMENT=BOTH			2000 Secs (2561 Secs) *[==>2561.0 Secs]*	***[4]***
6	Abell1835-on (COS.sp.1846088)	(2) ABELL1835	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=2451; FLASH=YES; FP-POS=1; SEGMENT=BOTH			2000 Secs (2561 Secs) *[==>2561.0 Secs]*	***[5]***

Orbit Structure





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Visit

Proposal 17716, Visit 02, implementation Tue Nov 05 23:00:39 GMT 2024

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

Diagnostics

(Visit 02) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions when observing at a given COS cenwave.

(MACS1931-on (02.002)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

(MACS1931-on (02.003)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

(MACS1931-on (02.004)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

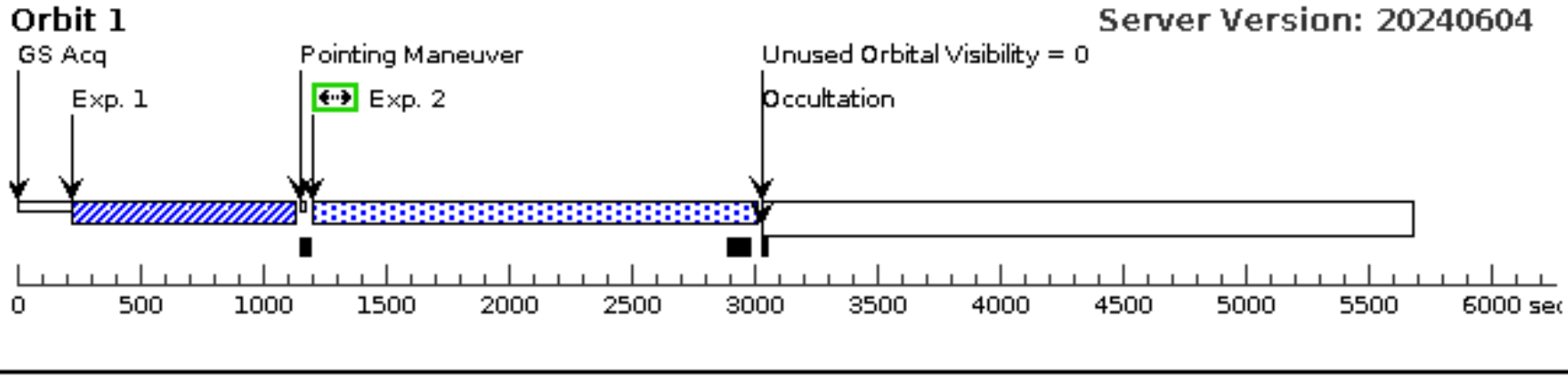
Fixed Targets

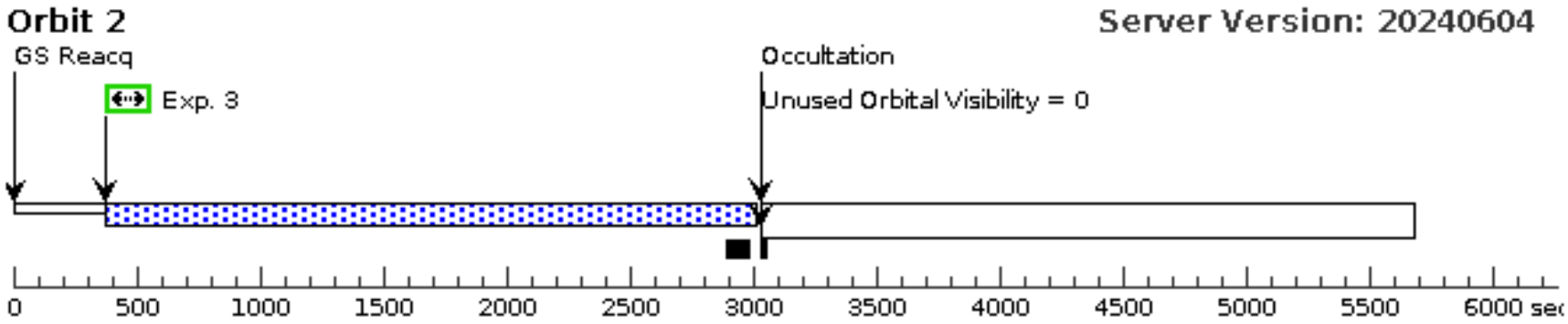
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	MACS1931-STAR	RA: 19 31 48.6492 (292.9527050d) Dec: -26 34 29.23 (-26.57479d) Equinox: J2000	Proper Motion RA: 0.015 mas/yr Proper Motion Dec: -3.110 mas/yr Epoch of Position: 2016	V=19	Reference Frame: ICRS
Comments: *Category=STAR* *Description=[UNDESIGNATED]* *Extended=NO*					
(4)	MACS1931.8-2634	Offset from MACS1931-STAR RA Offset: 0.0040805 Degrees Dec Offset: -8.935E-4 Degrees		V=18	Offset Position (MACS1931.8-2634)
Comments: *Category=CLUSTER OF GALAXIES* *Description=[COOLING FLOW, STAR FORMING REGION]* *Extended=YES*					

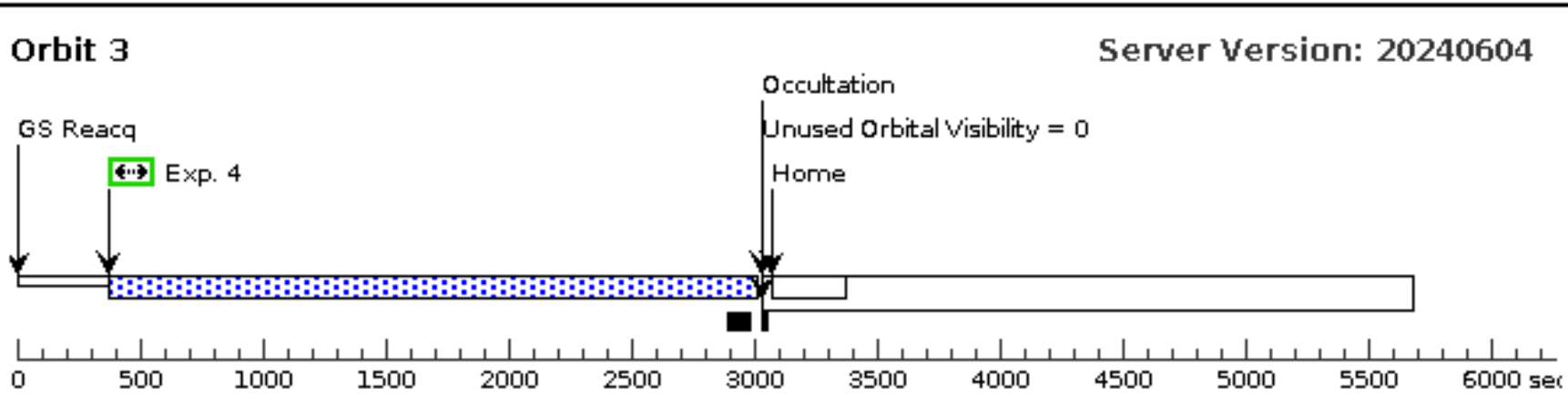
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	MACS1931 Acquisition (COS.ta.1931648)	(3) MACS1931-STAR	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				350 Secs (350 Secs) *[==>]*	***[1]***
Comments: Target star has g=19.5 vega mags and T=5446 from TESS TIC									
2	MACS1931-on (COS.sp.1847345)	(4) MACS1931.8-2634	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=1529; FLASH=YES; FP-POS=1; SEGMENT=A			1200 Secs (1639 Secs) *[==>1639.0 Secs]*	***[1]***
3	MACS1931-on (COS.sp.1847345)	(4) MACS1931.8-2634	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=2478; FLASH=YES; FP-POS=2; SEGMENT=A			2000 Secs (2588 Secs) *[==>2588.0 Secs]*	***[2]***
4	MACS1931-on (COS.sp.1847345)	(4) MACS1931.8-2634	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=2478; FLASH=YES; FP-POS=3; SEGMENT=A			2000 Secs (2588 Secs) *[==>2588.0 Secs]*	***[3]***

Orbit Structure







Visit

Proposal 17716, Visit 03, implementation Tue Nov 05 23:00:39 GMT 2024

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

Diagnostics

(Visit 03) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions when observing at a given COS cenwave.

(Visit 03) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS

(MACS1931-on (03.002)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

(MACS1931-on (03.003)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

(MACS1931-on (03.004)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

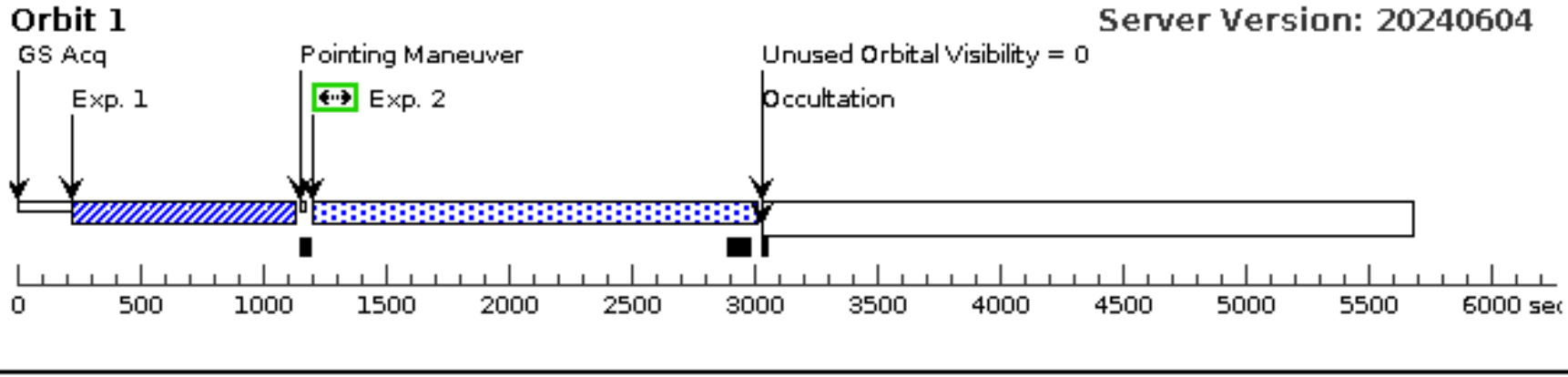
Fixed Targets

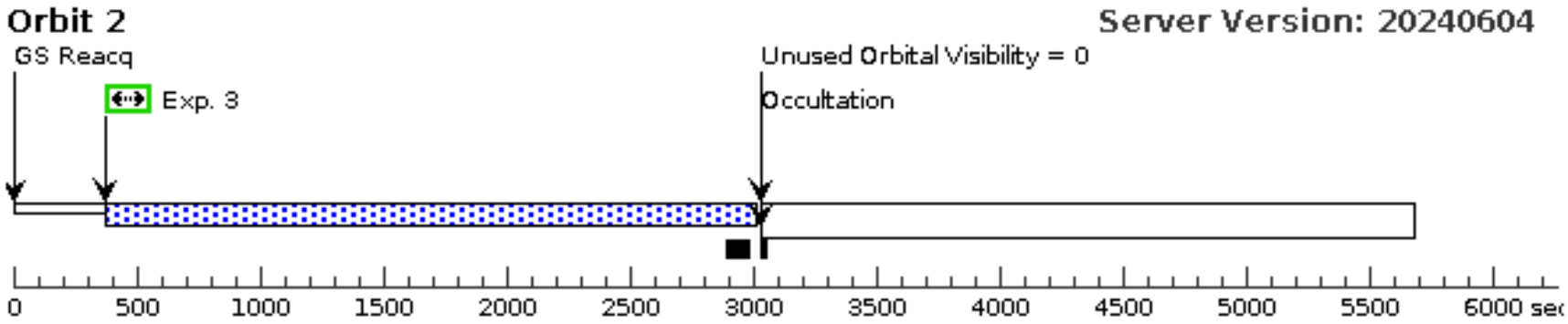
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	MACS1931-STAR	RA: 19 31 48.6492 (292.9527050d) Dec: -26 34 29.23 (-26.57479d) Equinox: J2000	Proper Motion RA: 0.015 mas/yr Proper Motion Dec: -3.110 mas/yr Epoch of Position: 2016	V=19	Reference Frame: ICRS
Comments: *Category=STAR* *Description=[UNDESIGNATED]* *Extended=NO*					
(4)	MACS1931.8-2634	Offset from MACS1931-STAR RA Offset: 0.0040805 Degrees Dec Offset: -8.935E-4 Degrees		V=18	Offset Position (MACS1931.8-2634)
Comments: *Category=CLUSTER OF GALAXIES* *Description=[COOLING FLOW, STAR FORMING REGION]* *Extended=YES*					

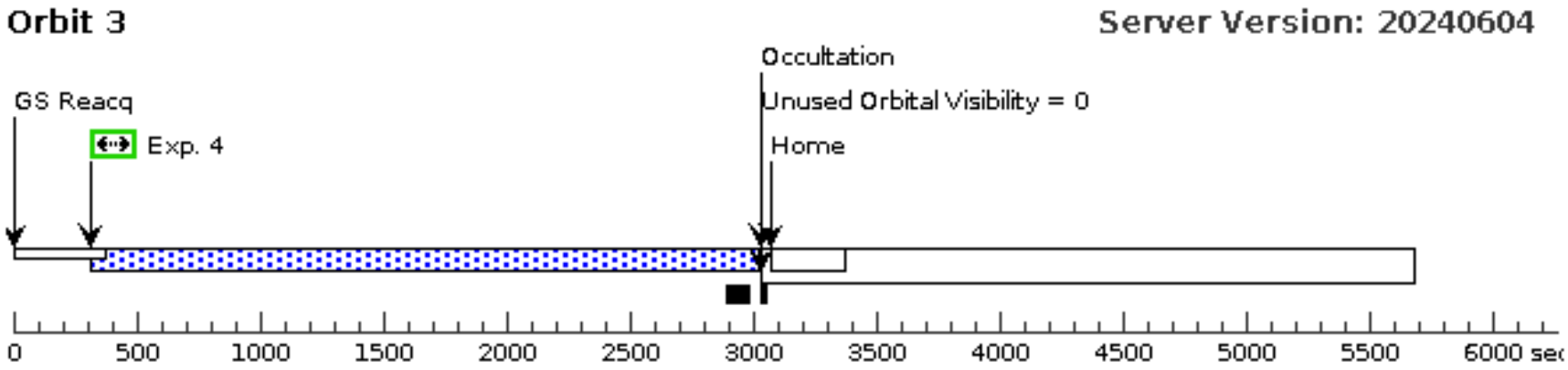
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	MACS1931 Acquisition (COS.ta.1931648)	(3) MACS1931-STAR	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				350 Secs (350 Secs) *[==>]*	***[1]***
Comments: Target star has g=19.5 vega mags and T=5446 from TESS TIC									
2	MACS1931-on (COS.sp.1847345)	(4) MACS1931.8-2634	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=1529; FLASH=YES; FP-POS=3; SEGMENT=A			1200 Secs (1639 Secs) *[==>1639.0 Secs]*	***[1]***
3	MACS1931-on (COS.sp.1847345)	(4) MACS1931.8-2634	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=2478; FLASH=YES; FP-POS=4; SEGMENT=A			2000 Secs (2588 Secs) *[==>2588.0 Secs]*	***[2]***
4	MACS1931-on (COS.sp.1847345)	(4) MACS1931.8-2634	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=2478; FLASH=YES; FP-POS=1; SEGMENT=A			2000 Secs (2588 Secs) *[==>2588.0 Secs]*	***[3]***

Orbit Structure







Visit

Proposal 17716, Visit 04, implementation Tue Nov 05 23:00:39 GMT 2024

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

Diagnostics

(Visit 04) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS

(Exposure 2 (Visit 04)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

(Exposure 3 (Visit 04)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

(Exposure 4 (Visit 04)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

(Exposure 5 (Visit 04)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

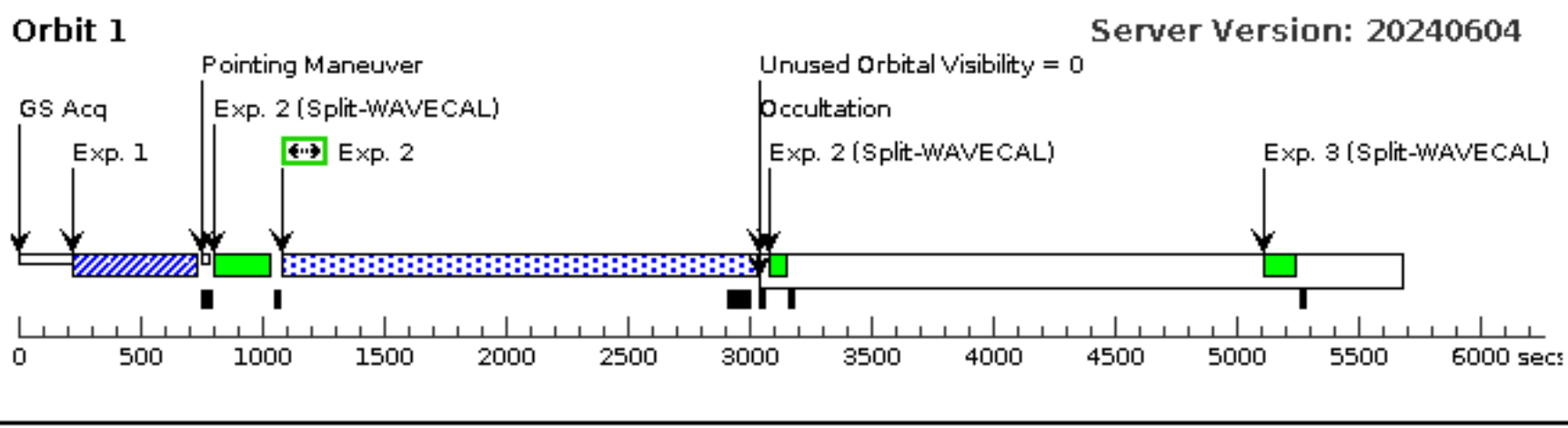
Fixed Targets

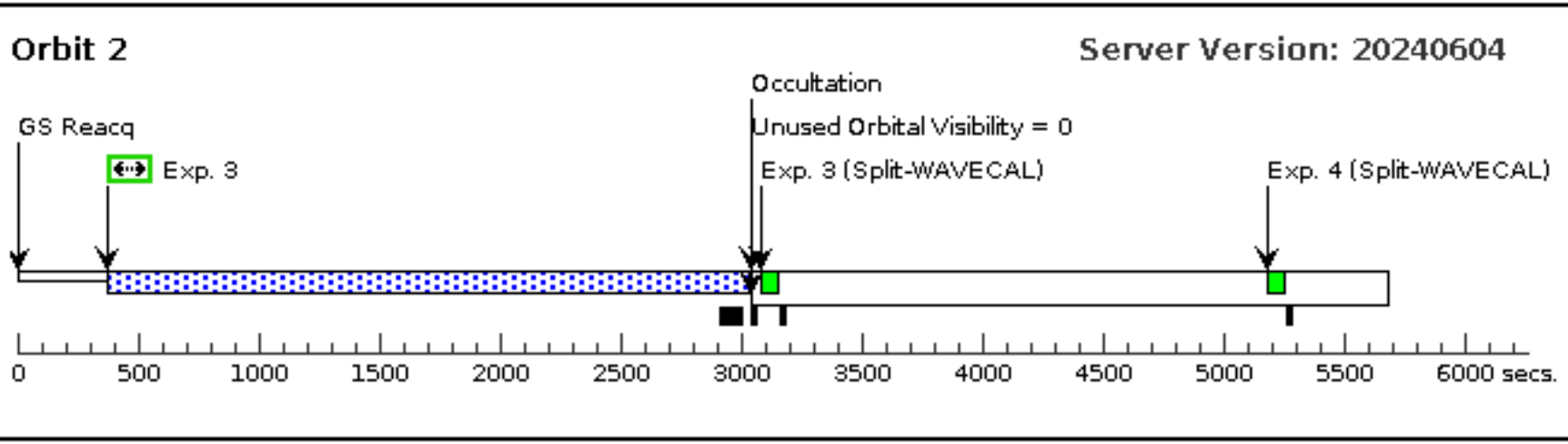
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(5)	CHIPS1911-STAR	RA: 19 10 59.6126 (287.7483858d) Dec: +44 55 28.54 (44.92459d) Equinox: J2000	Proper Motion RA: -3.06379 mas/yr Proper Motion Dec: 1.35552 mas/yr Epoch of Position: 2016	V=20	Reference Frame: ICRS
Comments: *Category=STAR* *Description=[UNDESIGNATED]* *Extended=NO*					
(6)	CHIPS1911+4455	Offset from CHIPS1911-STAR RA Offset: 0.0095614 Degrees Dec Offset: -0.0020325 Degrees		V=19	Offset Position (CHIPS1911+4455)
Comments: *Category=CLUSTER OF GALAXIES* *Description=[COOLING FLOW, STAR FORMING REGION]* *Extended=YES*					

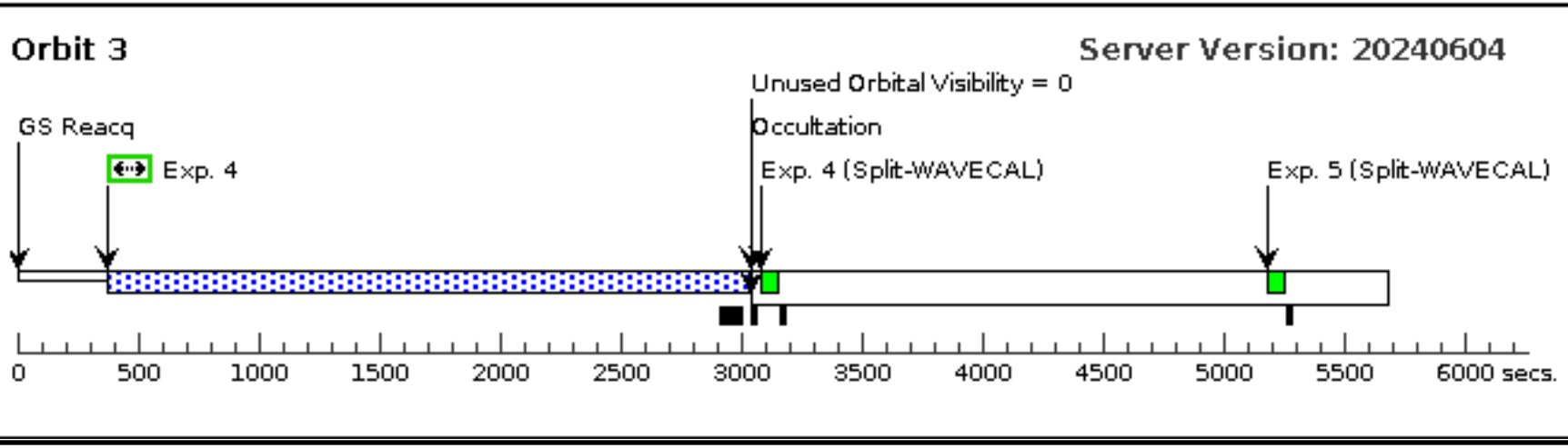
Exposures

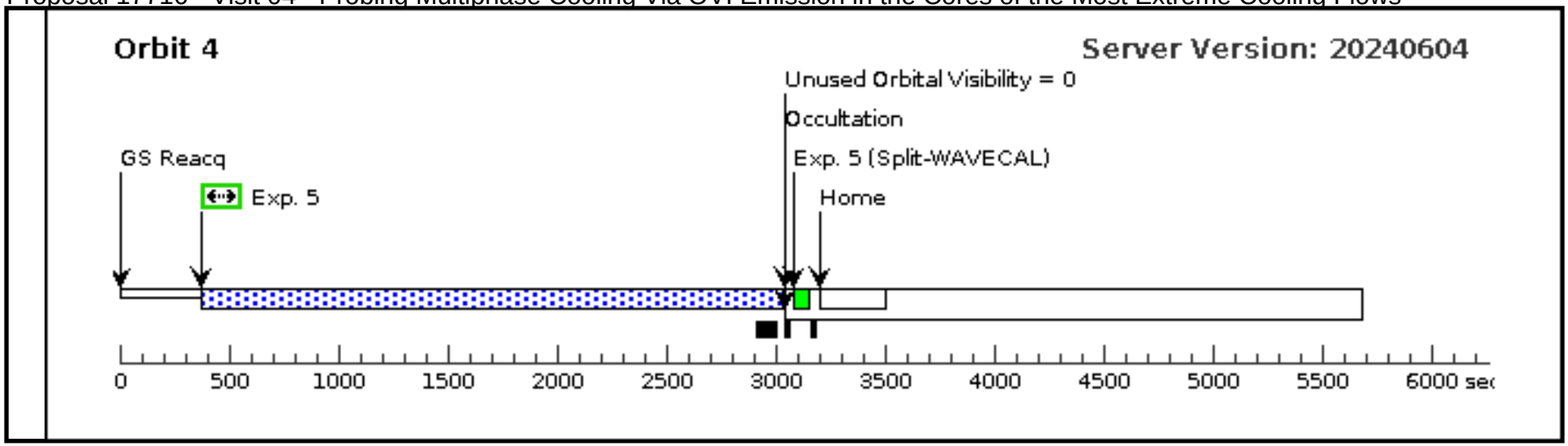
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	CHIPS1911 Acquisition (COS.ta.1931647)	(5) CHIPS1911-STAR	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				150 Secs (150 Secs) *[==>]*	***[1]***
Comments: Target star has g=19.14 vega mags and Teff=6122, from TESS TIC									
2	(COS.sp.1847338)	(6) CHIPS1911+4455	COS/FUV, TIME-TAG, PSA	G160M 1600 A	BUFFER-TIME=1786; FP-POS=4; SEGMENT=BOTH			1500 Secs (1896 Secs) *[==>1896.0 Secs]*	***[1]***
3	(COS.sp.1847338)	(6) CHIPS1911+4455	COS/FUV, TIME-TAG, PSA	G160M 1600 A	BUFFER-TIME=2499; FP-POS=1; SEGMENT=BOTH			2000 Secs (2609 Secs) *[==>2609.0 Secs]*	***[2]***
4	(COS.sp.1847338)	(6) CHIPS1911+4455	COS/FUV, TIME-TAG, PSA	G160M 1600 A	BUFFER-TIME=2499; FP-POS=2; SEGMENT=BOTH			2000 Secs (2609 Secs) *[==>2609.0 Secs]*	***[3]***
5	(COS.sp.1847338)	(6) CHIPS1911+4455	COS/FUV, TIME-TAG, PSA	G160M 1600 A	BUFFER-TIME=2499; FP-POS=3; SEGMENT=BOTH			2000 Secs (2609 Secs) *[==>2609.0 Secs]*	***[4]***

Orbit Structure





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Exp. 5
Exp. 5 (Split-WAVECAL)
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Visit

Proposal 17716, Visit 05, implementation Tue Nov 05 23:00:39 GMT 2024

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

Diagnostics

(Exposure 2 (Visit 05)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

(Exposure 3 (Visit 05)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

(Exposure 4 (Visit 05)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

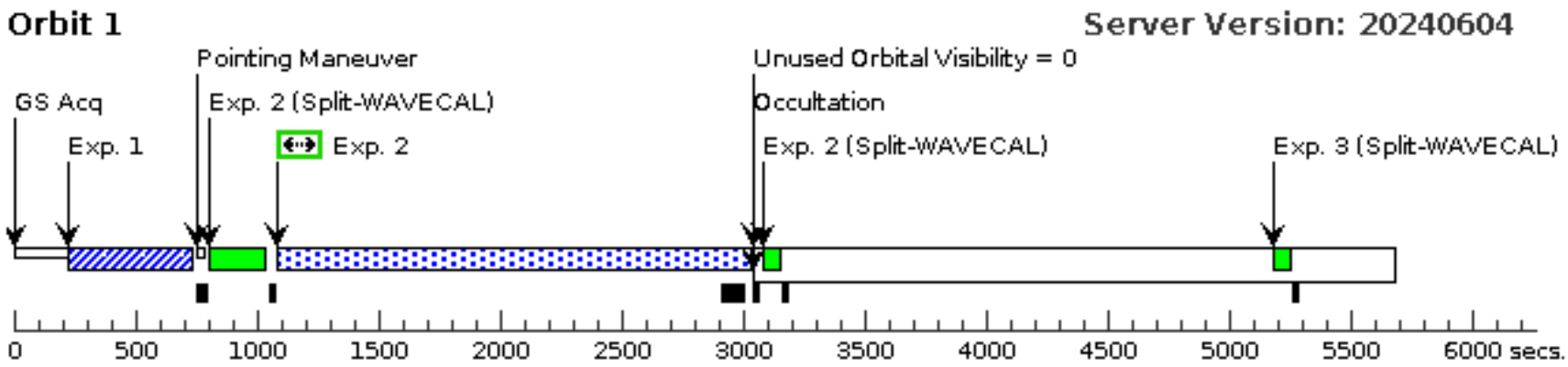
Fixed Targets

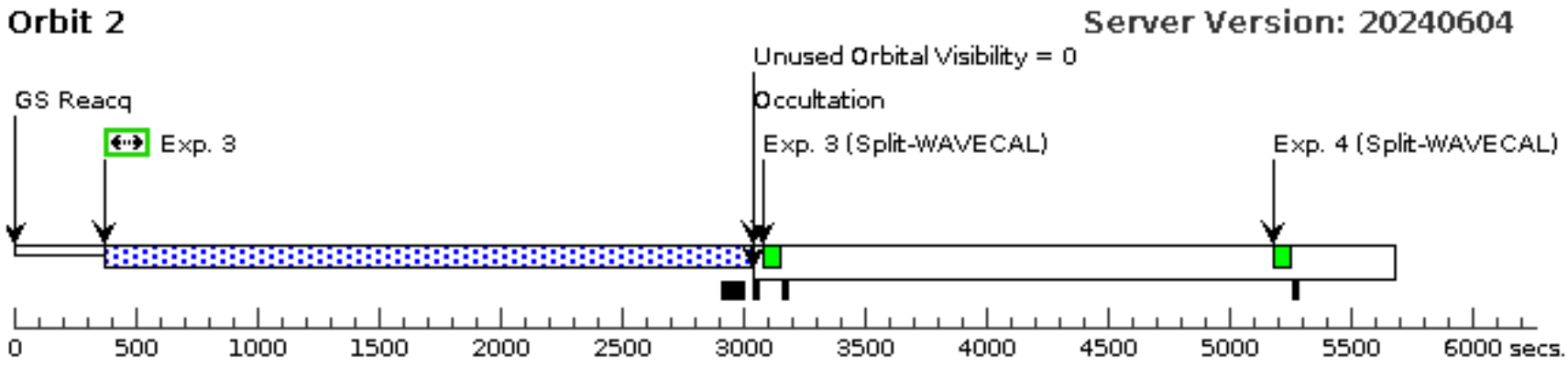
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(5)	CHIPS1911-STAR	RA: 19 10 59.6126 (287.7483858d) Dec: +44 55 28.54 (44.92459d) Equinox: J2000	Proper Motion RA: -3.06379 mas/yr Proper Motion Dec: 1.35552 mas/yr Epoch of Position: 2016	V=20	Reference Frame: ICRS
Comments: *Category=STAR* *Description=[UNDESIGNATED]* *Extended=NO*					
(6)	CHIPS1911+4455	Offset from CHIPS1911-STAR RA Offset: 0.0095614 Degrees Dec Offset: -0.0020325 Degrees		V=19	Offset Position (CHIPS1911+4455)
Comments: *Category=CLUSTER OF GALAXIES* *Description=[COOLING FLOW, STAR FORMING REGION]* *Extended=YES*					

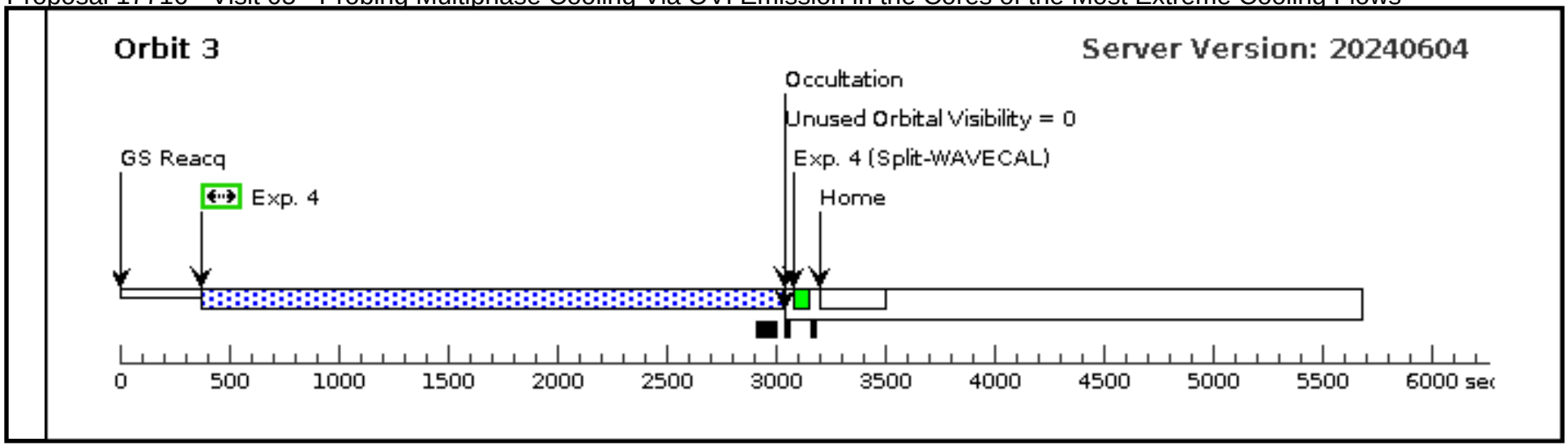
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	CHIPS1911 Acquisition (COS.ta.1931647)	(5) CHIPS1911-STAR	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				150 Secs (150 Secs) *[==>]*	***[1]***
Comments: Target star has g=19.14 vega mags and Teff=6122, from TESS TIC									
2	(COS.sp.1847338)	(6) CHIPS1911+4455	COS/FUV, TIME-TAG, PSA	G160M 1600 A	BUFFER-TIME=1786; FP-POS=2; SEGMENT=BOTH			1500 Secs (1896 Secs) *[==>1896.0 Secs]*	***[1]***
3	(COS.sp.1847338)	(6) CHIPS1911+4455	COS/FUV, TIME-TAG, PSA	G160M 1600 A	BUFFER-TIME=2499; FP-POS=3; SEGMENT=BOTH			2000 Secs (2609 Secs) *[==>2609.0 Secs]*	***[2]***
4	(COS.sp.1847338)	(6) CHIPS1911+4455	COS/FUV, TIME-TAG, PSA	G160M 1600 A	BUFFER-TIME=2499; FP-POS=4; SEGMENT=BOTH			2000 Secs (2609 Secs) *[==>2609.0 Secs]*	***[3]***

Orbit Structure






Orbit 3
Server Version: 20240604
Occultation
Unused Orbital Visibility = 0
GS Reacq
Exp. 4 (Split-WAVECAL)
Exp. 4
Home
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500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000 sec

Visit

Proposal 17716, Visit 06, implementation Tue Nov 05 23:00:39 GMT 2024

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

Diagnostics

(Visit 06) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS

(Exposure 2 (Visit 06)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

(Exposure 3 (Visit 06)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

(Exposure 4 (Visit 06)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

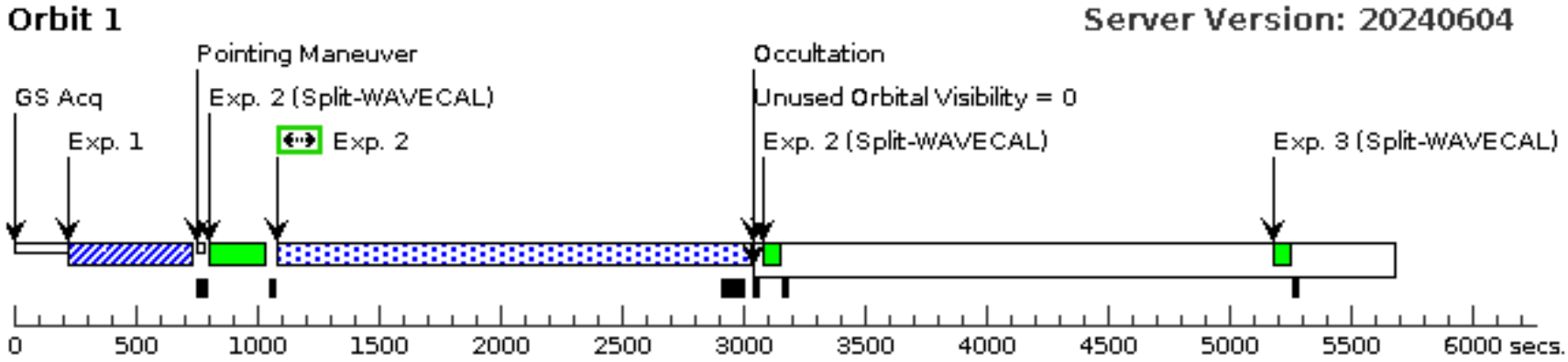
Fixed Targets

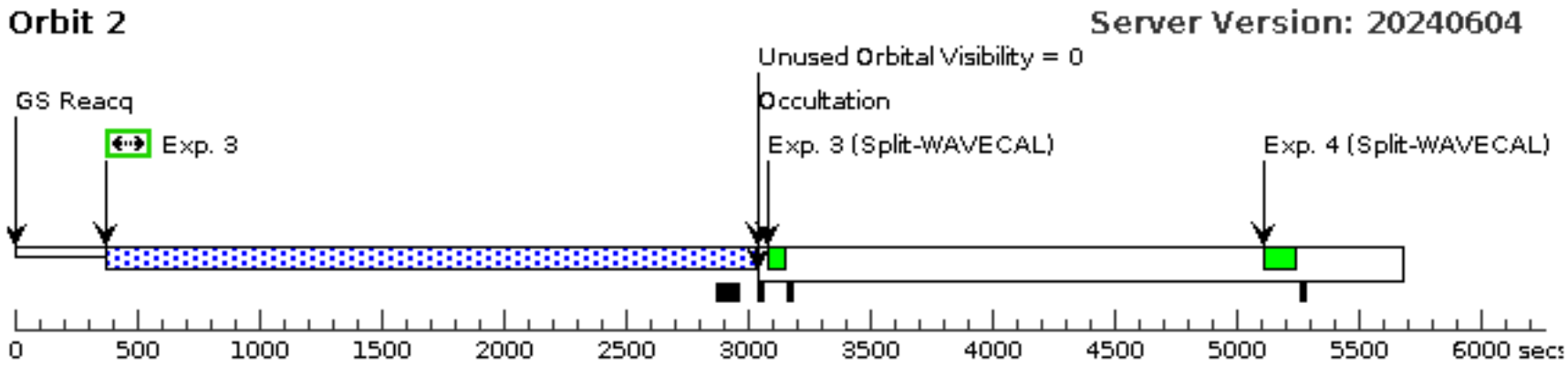
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(5)	CHIPS1911-STAR	RA: 19 10 59.6126 (287.7483858d) Dec: +44 55 28.54 (44.92459d) Equinox: J2000	Proper Motion RA: -3.06379 mas/yr Proper Motion Dec: 1.35552 mas/yr Epoch of Position: 2016	V=20	Reference Frame: ICRS
Comments: *Category=STAR* *Description=[UNDESIGNATED]* *Extended=NO*					
(6)	CHIPS1911+4455	Offset from CHIPS1911-STAR RA Offset: 0.0095614 Degrees Dec Offset: -0.0020325 Degrees		V=19	Offset Position (CHIPS1911+4455)
Comments: *Category=CLUSTER OF GALAXIES* *Description=[COOLING FLOW, STAR FORMING REGION]* *Extended=YES*					

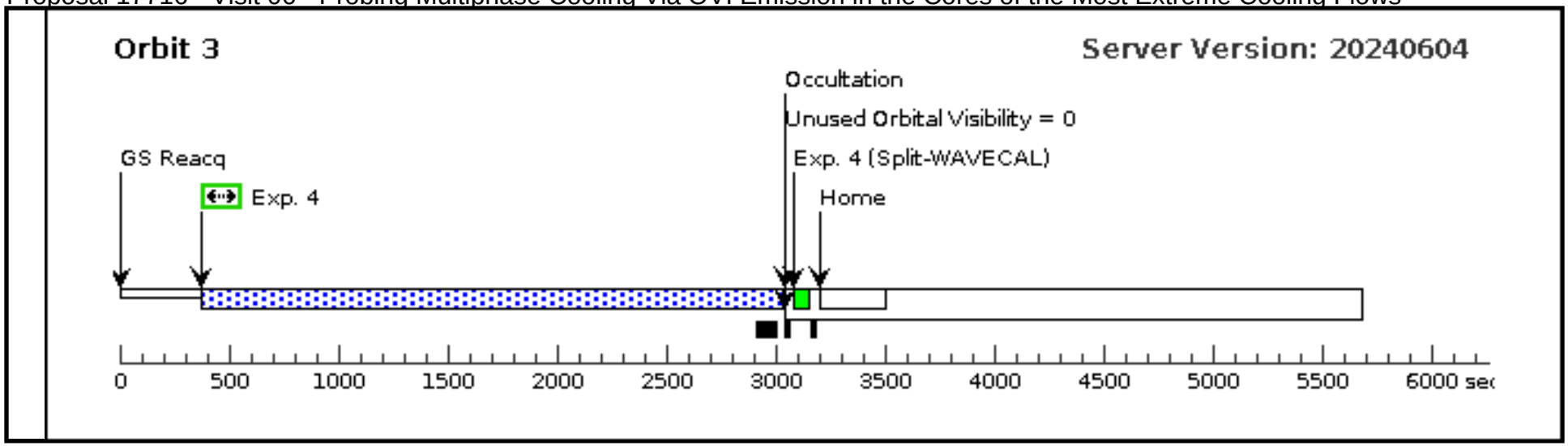
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	CHIPS1911 Acquisition (COS.ta.1931647)	(5) CHIPS1911-STAR	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				150 Secs (150 Secs) *[==>]*	***[1]***
Comments: Target star has g=19.14 vega mags and Teff=6122, from TESS TIC									
2	(COS.sp.1847338)	(6) CHIPS1911+4455	COS/FUV, TIME-TAG, PSA	G160M 1600 A	BUFFER-TIME=1786; FP-POS=3; SEGMENT=BOTH			1500 Secs (1896 Secs) *[==>1896.0 Secs]*	***[1]***
3	(COS.sp.1847338)	(6) CHIPS1911+4455	COS/FUV, TIME-TAG, PSA	G160M 1600 A	BUFFER-TIME=2459; FP-POS=4; SEGMENT=BOTH			1500 Secs (2609 Secs) *[==>2609.0 Secs]*	***[2]***
4	(COS.sp.1847338)	(6) CHIPS1911+4455	COS/FUV, TIME-TAG, PSA	G160M 1600 A	BUFFER-TIME=2499; FP-POS=1; SEGMENT=BOTH			2000 Secs (2609 Secs) *[==>2609.0 Secs]*	***[3]***

Orbit Structure



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Server Version: 20240604
Occultation
Unused Orbital Visibility = 0
GS Reacq
Exp. 4 (Split-WAVECAL)
Exp. 4
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2000
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3500
4000
4500
5000
5500
6000 sec

Visit

Proposal 17716, Visit 07, implementation Tue Nov 05 23:00:39 GMT 2024

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

Diagnostics

(Visit 07) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS

(Exposure 2 (Visit 07)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

(Exposure 3 (Visit 07)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

(Exposure 4 (Visit 07)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.

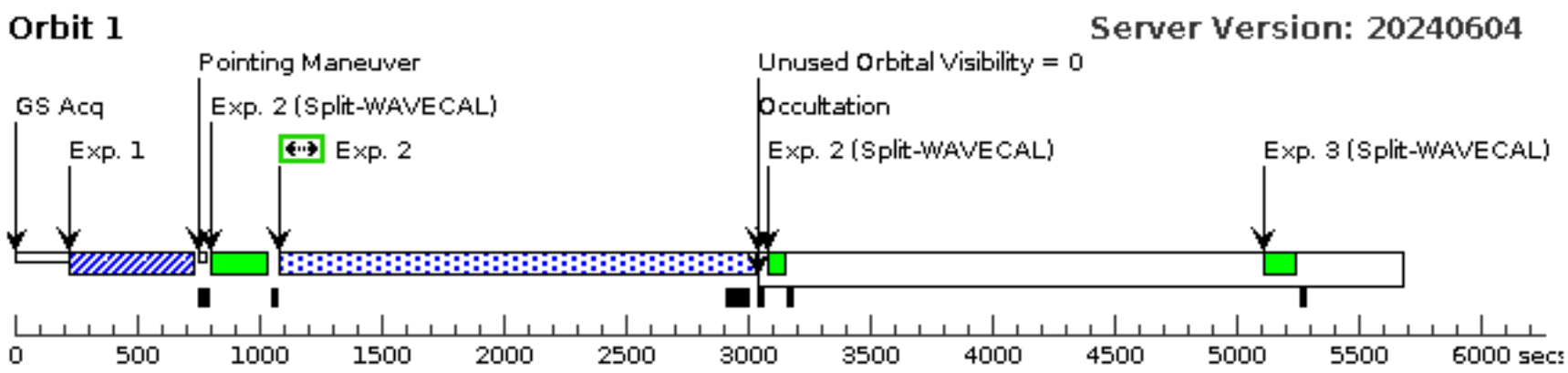
Fixed Targets

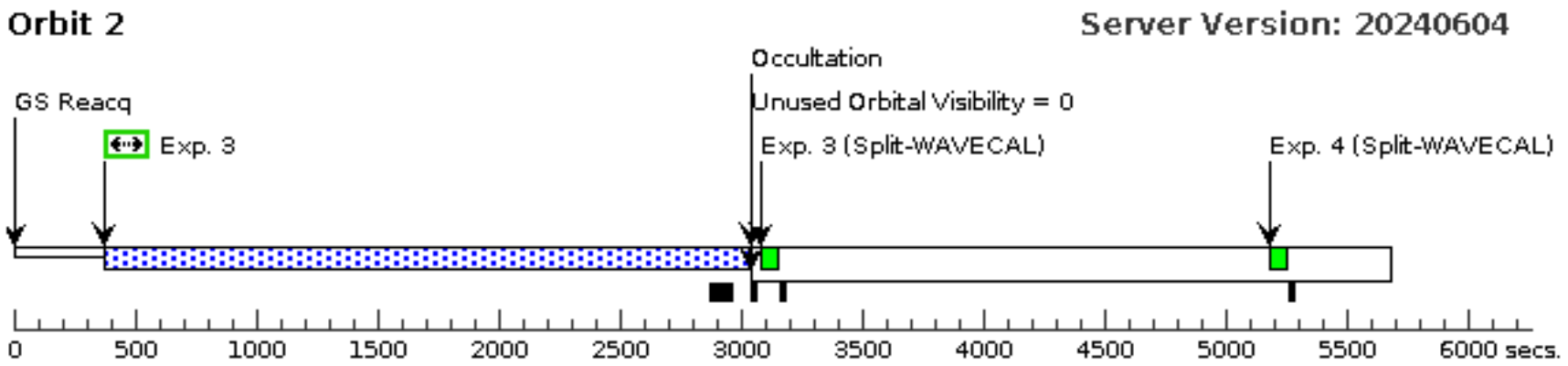
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(5)	CHIPS1911-STAR	RA: 19 10 59.6126 (287.7483858d) Dec: +44 55 28.54 (44.92459d) Equinox: J2000	Proper Motion RA: -3.06379 mas/yr Proper Motion Dec: 1.35552 mas/yr Epoch of Position: 2016	V=20	Reference Frame: ICRS
Comments: *Category=STAR* *Description=[UNDESIGNATED]* *Extended=NO*					
(6)	CHIPS1911+4455	Offset from CHIPS1911-STAR RA Offset: 0.0095614 Degrees Dec Offset: -0.0020325 Degrees		V=19	Offset Position (CHIPS1911+4455)
Comments: *Category=CLUSTER OF GALAXIES* *Description=[COOLING FLOW, STAR FORMING REGION]* *Extended=YES*					

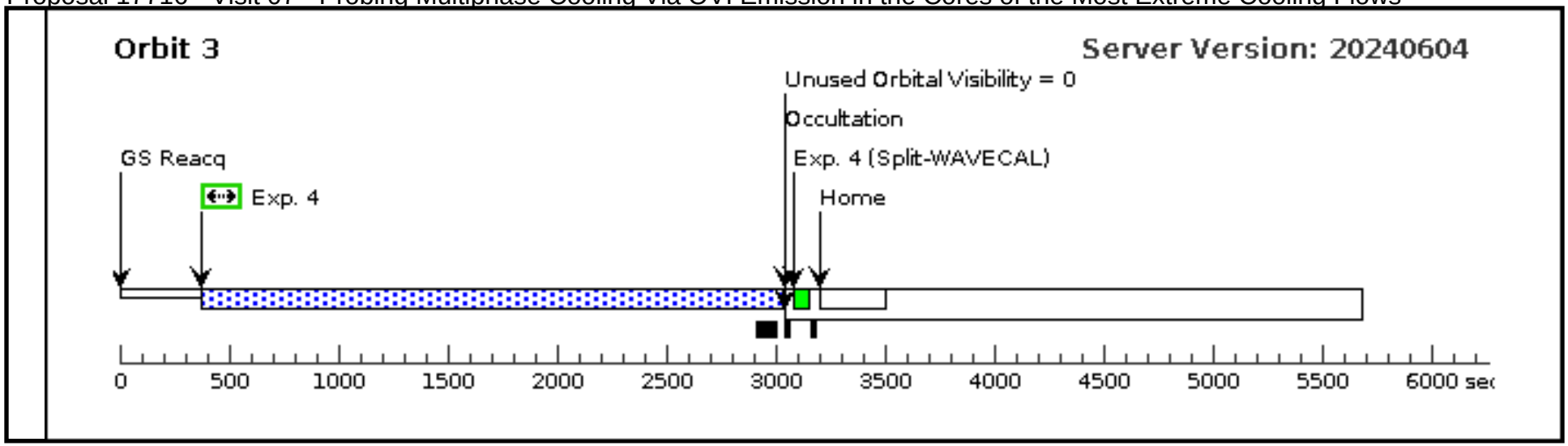
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	CHIPS1911 Acquisition (COS.ta.1931647)	(5) CHIPS1911-STAR	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				150 Secs (150 Secs) *[==>]*	***[1]***
Comments: Target star has g=19.14 vega mags and Teff=6122, from TESS TIC									
2	(COS.sp.1847338)	(6) CHIPS1911+4455	COS/FUV, TIME-TAG, PSA	G160M 1600 A	BUFFER-TIME=1786; FP-POS=4; SEGMENT=BOTH			1500 Secs (1896 Secs) *[==>1896.0 Secs]*	***[1]***
3	(COS.sp.1847338)	(6) CHIPS1911+4455	COS/FUV, TIME-TAG, PSA	G160M 1600 A	BUFFER-TIME=2459; FP-POS=1; SEGMENT=BOTH			1500 Secs (2609 Secs) *[==>2609.0 Secs]*	***[2]***
4	(COS.sp.1847338)	(6) CHIPS1911+4455	COS/FUV, TIME-TAG, PSA	G160M 1600 A	BUFFER-TIME=2499; FP-POS=2; SEGMENT=BOTH			2000 Secs (2609 Secs) *[==>2609.0 Secs]*	***[3]***

Orbit Structure






Orbit 3
Server Version: 20240604
Unused Orbital Visibility = 0
Occultation
GS Reacq
Exp. 4 (Split-WAVECAL)
Exp. 4
Home
0
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4000
4500
5000
5500
6000 sec