14145 - Characterizing Circumgalactic Gas around Passive Galaxies

Cycle: 23, Proposal Category: GO

(UV Initiative)

(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) J0946+5123	COS/FUV COS/NUV	3	29-Jul-2016 13:08:12.0	yes
02	(1) J0946+5123	COS/FUV COS/NUV	4	29-Jul-2016 13:08:13.0	yes
03	(2) J1406+2509	COS/FUV COS/NUV	3	29-Jul-2016 13:08:15.0	yes
04	(2) J1406+2509	COS/FUV COS/NUV	4	29-Jul-2016 13:08:16.0	yes
05	(3) J1127+1154	COS/FUV COS/NUV	2	29-Jul-2016 13:08:17.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
06	(3) J1127+1154	COS/FUV COS/NUV	4	29-Jul-2016 13:08:18.0	yes
07	(4) J1243+3539	COS/FUV COS/NUV	3	29-Jul-2016 13:08:20.0	yes
11	(4) J1243+3539	COS/FUV COS/NUV	4	29-Jul-2016 13:08:21.0	yes
08	(4) J1243+3539	COS/FUV COS/NUV	4	29-Jul-2016 13:08:22.0	yes
09	(5) J0246-0059	COS/FUV COS/NUV	3	29-Jul-2016 13:08:24.0	yes
10	(5) J0246-0059	COS/FUV COS/NUV	3	29-Jul-2016 13:08:25.0	yes

37 Total Orbits Used

ABSTRACT

Luminous Red Galaxies (LRGs) are passive galaxies found in dark matter halos of ~1E13 Msun with little to no on-going star formation detected. Our group noted in 2009 that a significant fraction of LRGs at z ~ 0.5 display coincident strong MgII absorbers in their halos. This finding is now confirmed with a new and larger sample of LRGs available from SDSS DR12. The presence of cool gas in these massive halos challenges predictions from both numerical simulations and analytic models that halo gas around massive galaxies is hot (T>1E6 K) and cold clumps would evaporate quickly. The quiescent state of the galaxy also makes starburst outflows an unlikely explanation for the observed MgII absorbers. However, direct and quantitative comparisons with theoretical predictions require knowledge of HI column density and metallicity. To determine these quantities at z ~ 0.5, FUV spectra of the QSOs are necessary. We have searched SDSS and GALEX archives and found a total of 9 LRGs with a UV bright QSO (FUV<18.5 mag) at projected distances < 150 kpc. This close LRG-QSO pair sample offers a unique and important opportunity to gain a deeper understanding of halo gas content around LRGs. Four of the QSOs have COS spectra already available in the HST archive, and an initial analysis of the data indicates a modest scatter in the physical properties. Here we propose to obtain high-resolution COS G130M and G160M spectra for the remaining five QSO. The proposed and archival COS spectra together will enable a detailed study of the ionization state and metallicity of halo gas around quiescent galaxies, and offer key insights into the physical origin of cool gas in massive halos.

OBSERVING DESCRIPTION

We will obtain high-resolution FUV spectra of five UV bright QSOs located at projected distance d<150 kpc from a foreground luminous red galaxy (LRG), using COS and the G130M and G160M gratings. The goal of the proposed observations is to determine the neutral hydrogen column density, N(HI), and metallicity of the cool clouds found in quiescent LRG halos. The redshifts of the LRGs are ideally suited for the COS wavelength coverage enabling observations of the full HI Lyman series and a suite of heavy element transitions for accurate measurements of N(HI), gas ionization state, and metallicity.

Exposure Time Estimate:

Based on our previous experience with COS data, we estimate that a signal-to-noise ratio (SNR) of >7 per resolution element is required to place constraints on the ionization-state and metallicity of the absorbing gas. Observations of this moderate SNR will enable 2-sigma rest-frame detection limits of better than W=0.1 Ang, for absorption features at the LRG redshift between the Lyman-limit and Lya features. The equivalent width limit corresponds to sensitive column density limits of, for example, 2e13 cm^{-2} for HI & SiII and lower for SiIII and CIII, accounting for the broad wings of the COS line spread function. Achieving the desired signal-to-noise ratio of these transitions will result in a higher SNR of 15 per resolution element at the expected positions of the CII and OVI transitions enabling detection limits of 3e13 cm^{-2} for these weaker absorbers. To estimate the exposure time to reach the desired SNR, we used the COS spectroscopic ETC and GALEX FUV magnitudes of the QSOs which range from AB(FUV)=18.0 to AB(FUV)=18.4. We estimate required exposures times of 2 orbits for G130M and 4-5 orbits for G160M.

COS Configuration:

The desired spectral coverage can be provided by the G130M and G160M gratings with standard central wavelength settings. These two gratings also provide sufficient resolution (FWHM ~ 18 km/s) for detecting weak, narrow absorption systems. We use two central wavelength settings to obtain contiguous spectral coverage and choose the combination to minimize the chances of critical absorption features falling in the low S/N gap. For each central wavelength setting, we use between two and three FP-POS offsets to minimize fixed pattern noise. Combining two central wavelength settings per grating and 2-3 FP-POS offsets per central wavelength setting leads to at least 4 different FP-POS offsets per grating.

Target Acquisition:

The COS entrance aperture is 2.5" in diameter. To center the quasar in the aperture at the beginning of each visit, we will obtain an FUV image in ACQ/IMAGE mode. No ACQ/SEARCH is necessary because the quasar coordinates are known to better than 0.1". The GALEX FUV magnitudes

of the quasars range from AB(FUV)=18 to AB(FUV)=18.4. Using the COS Target Acquisition ETC, we find that for two QSOs, J0946+5123 and J1243+3539, we can obtain S/N greater than 40 in less than 10 sec using MIRROR A. For the other three, we need to use MIRROR B to avoid exceeding the bright limit.

Visit

Proposal 14145, Visit 01, scheduling Fri Jul 29 17:08:26 GMT 2016

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

Diagnostics

(Visit 01) Warning (Form): For the best data quality, it is strongly recommended that all four FP-POS positions be used when observing at a given COS CENWAVE setting.

Fixed Targets

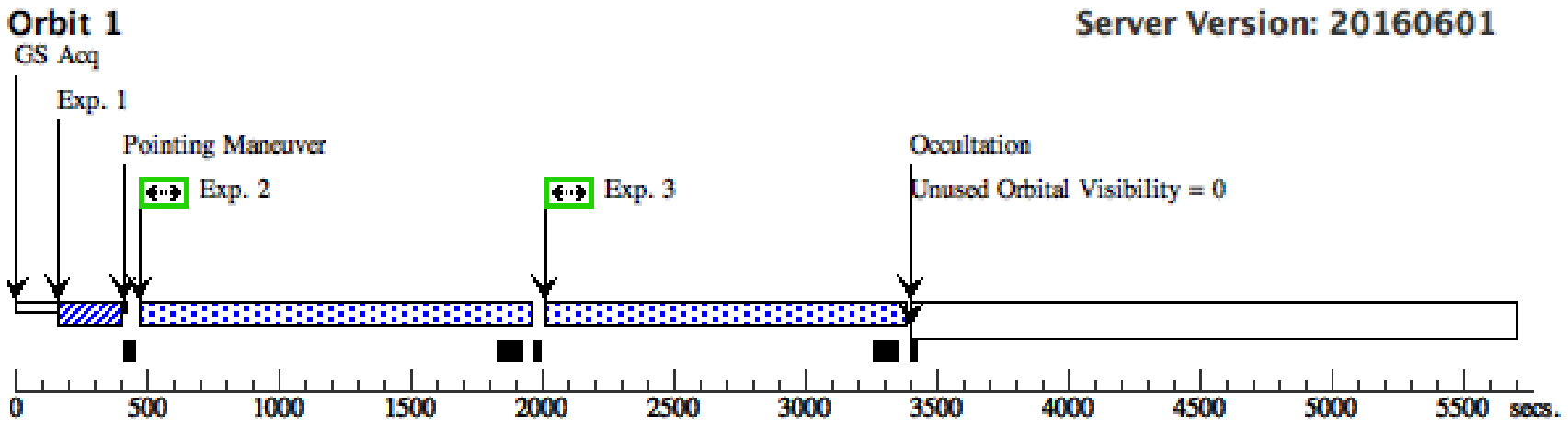
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	J0946+5123	RA: 09 46 31.6968 (146.6320700d) Dec: +51 23 40.01 (51.39445d) Equinox: J2000		V=18.4 AB(FUV)=18.44; AB(NUV)=18.01	Reference Frame: ICRS

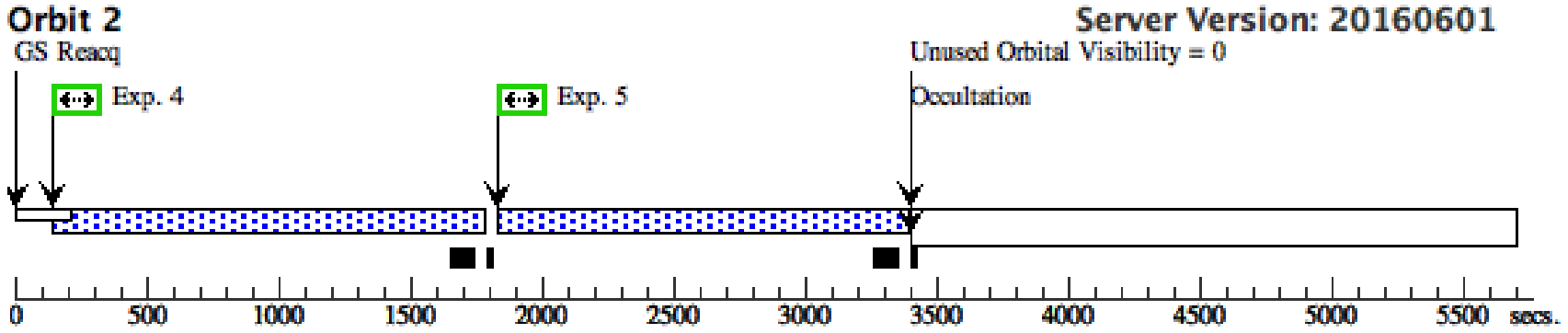
Comments: Extended=NO

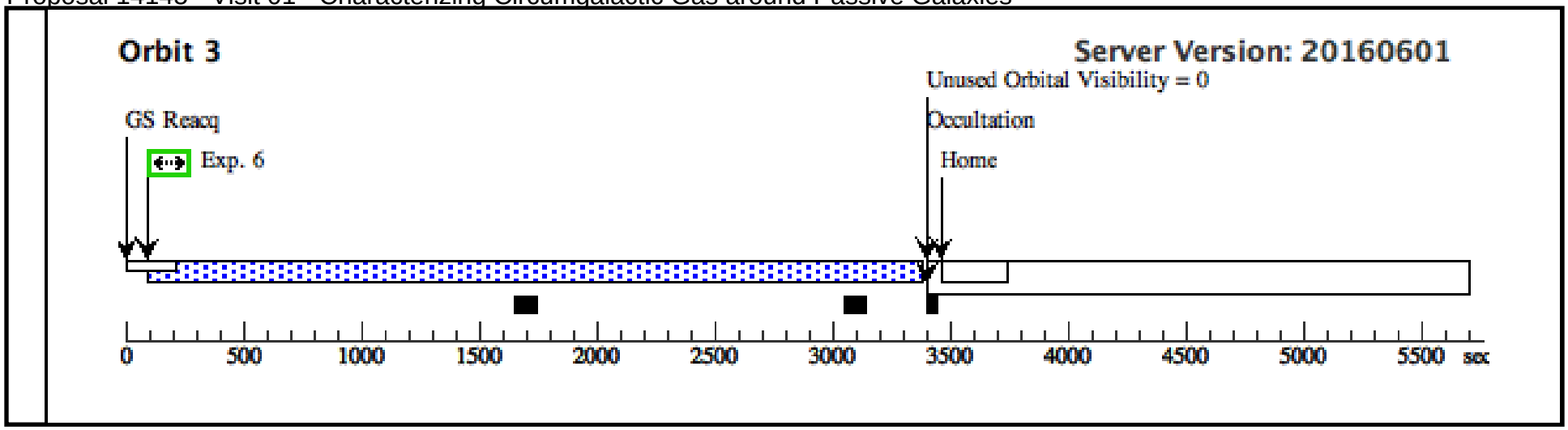
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.ta.718248)	(1) J0946+5123	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				6.5 Secs (6.5 Secs) *[==>]*	*[1]*
2	(COS.sp.716979)	(1) J0946+5123	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=1; FLASH=YES; BUFFER-TIME=1211			1321 Secs (1321 Secs) *[==>]*	*[1]*
3	(COS.sp.716979)	(1) J0946+5123	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FLASH=YES; FP-POS=2; BUFFER-TIME=1211			1321 Secs (1321 Secs) *[==>]*	*[1]*
4	(COS.sp.717026)	(1) J0946+5123	COS/FUV, TIME-TAG, PSA	G130M 1318 A	FP-POS=3; FLASH=YES; BUFFER-TIME=1396			1506 Secs (1506 Secs) *[==>]*	*[2]*
5	(COS.sp.717026)	(1) J0946+5123	COS/FUV, TIME-TAG, PSA	G130M 1318 A	FLASH=YES; FP-POS=4; BUFFER-TIME=1396			1506 Secs (1506 Secs) *[==>]*	*[2]*
6	(COS.sp.717042)	(1) J0946+5123	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FLASH=YES; FP-POS=4; BUFFER-TIME=1400			3115 Secs (3115 Secs) *[==>]*	*[3]*

Orbit Structure



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GS Reacq
Occultation
Exp. 6
Home
0
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3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 14145, Visit 02, scheduling Fri Jul 29 17:08:26 GMT 2016

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

Diagnostics

(Visit 02) Warning (Form): For the best data quality, it is strongly recommended that all four FP-POS positions be used when observing at a given COS CENWAVE setting.

Fixed Targets

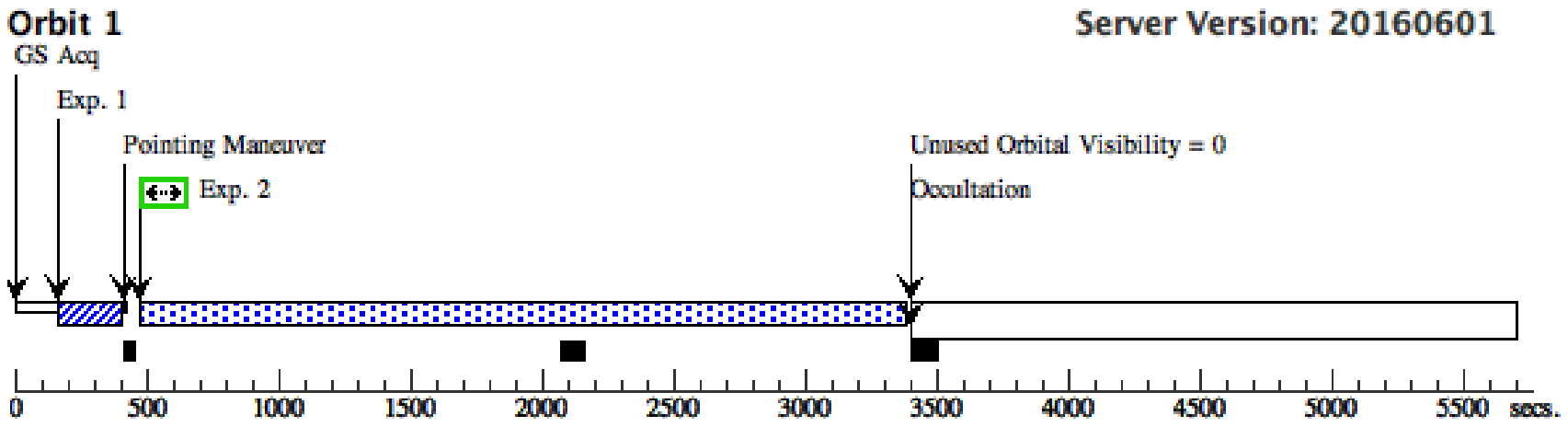
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	J0946+5123	RA: 09 46 31.6968 (146.6320700d) Dec: +51 23 40.01 (51.39445d) Equinox: J2000		V=18.4 AB(FUV)=18.44; AB(NUV)=18.01	Reference Frame: ICRS

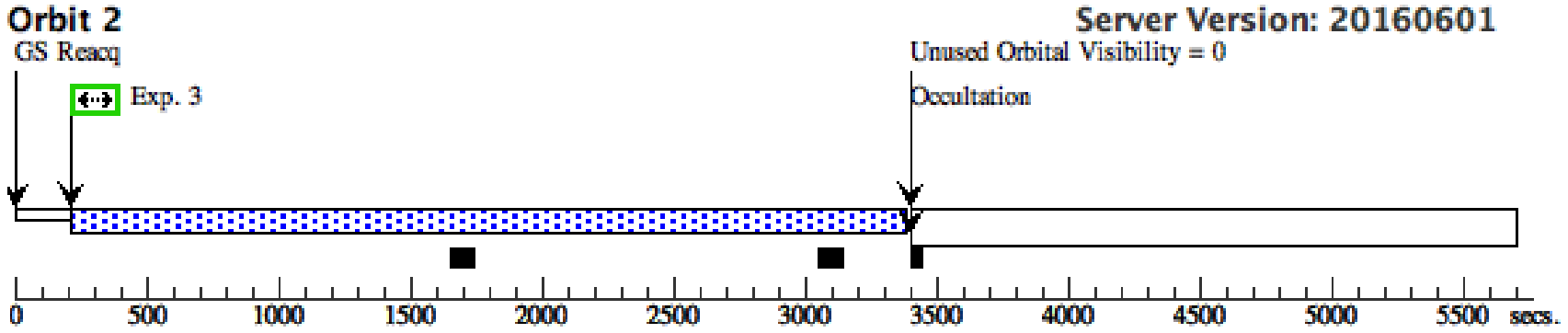
Comments: Extended=NO

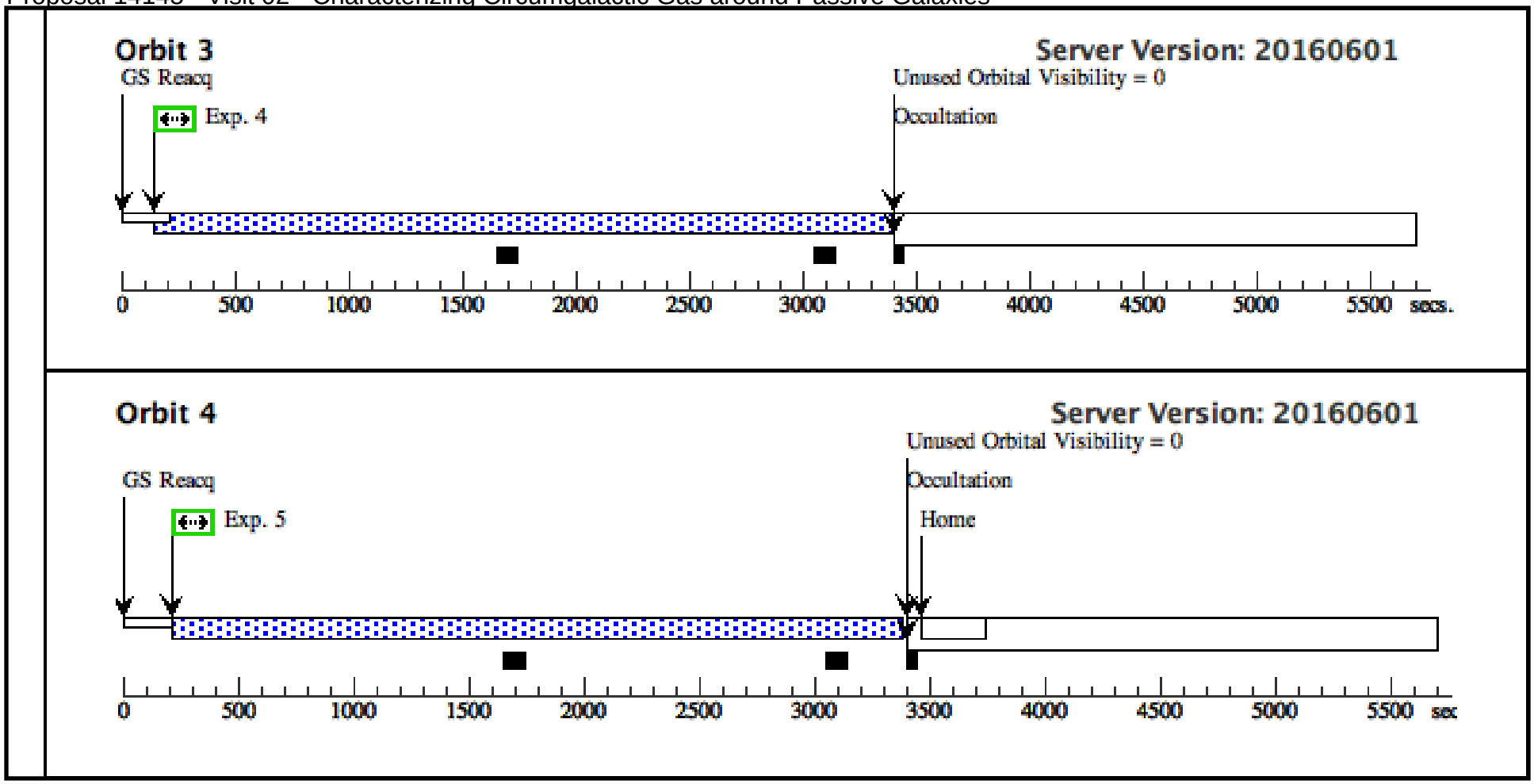
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.ta.718248)	(1) J0946+5123	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				6.5 Secs (6.5 Secs) *[==>]*	*[1]*
2	(COS.sp.717042)	(1) J0946+5123	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FLASH=YES; FP-POS=1; BUFFER-TIME=1400			2699 Secs (2699 Secs) *[==>]*	*[1]*
3	(COS.sp.717042)	(1) J0946+5123	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FLASH=YES; FP-POS=2; BUFFER-TIME=1400			3117 Secs (3117 Secs) *[==>]*	*[2]*
4	(COS.sp.717069)	(1) J0946+5123	COS/FUV, TIME-TAG, PSA	G160M 1611 A	FLASH=YES; FP-POS=3; BUFFER-TIME=1400			3117 Secs (3117 Secs) *[==>]*	*[3]*
5	(COS.sp.717069)	(1) J0946+5123	COS/FUV, TIME-TAG, PSA	G160M 1611 A	FLASH=YES; FP-POS=4; BUFFER-TIME=1400			3117 Secs (3117 Secs) *[==>]*	*[4]*

Orbit Structure



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Occultation
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2500
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3500
4000
4500
5000
5500
secs.
Orbit 4
Server Version: 20160601
Unused Orbital Visibility = 0
GS Reacq
Occultation
Exp. 5
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 14145, Visit 03, scheduling Fri Jul 29 17:08:26 GMT 2016

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

Diagnostics

(Visit 03) Warning (Form): For the best data quality, it is strongly recommended that all four FP-POS positions be used when observing at a given COS CENWAVE setting.

Fixed Targets

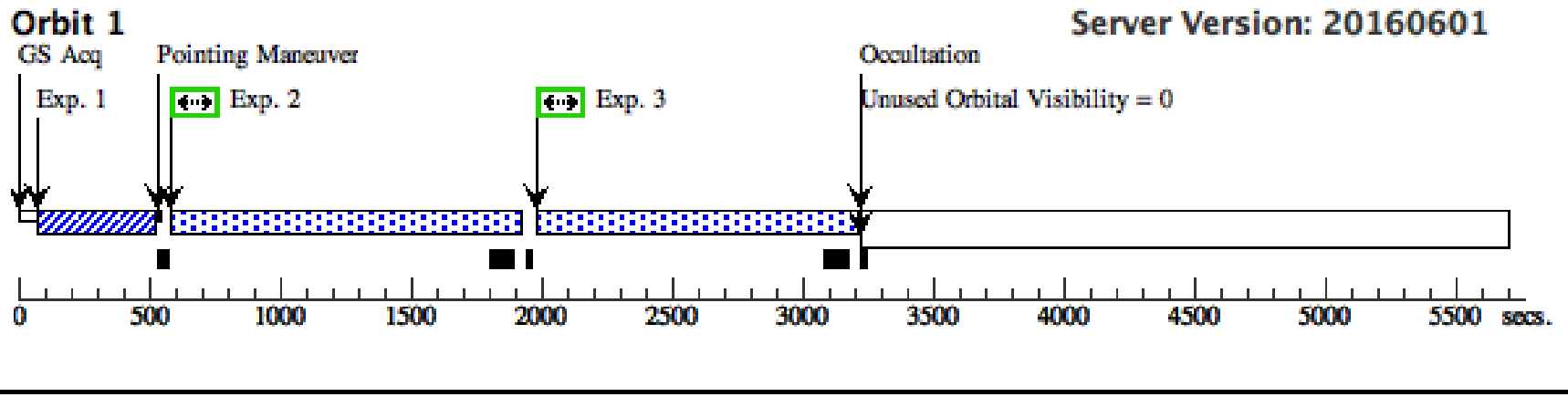
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	J1406+2509	RA: 14 06 26.6064 (211.6108600d) Dec: +25 09 21.05 (25.15585d) Equinox: J2000		V=16.54 AB(FUV)=18.32; AB(NUV)=17.24	Reference Frame: ICRS

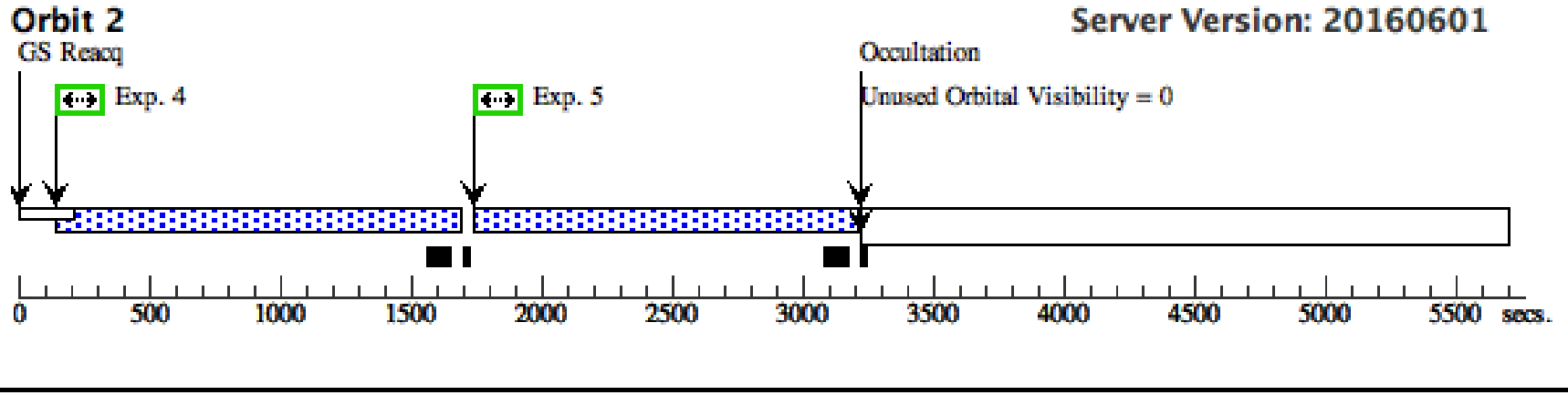
Comments: Extended=NO

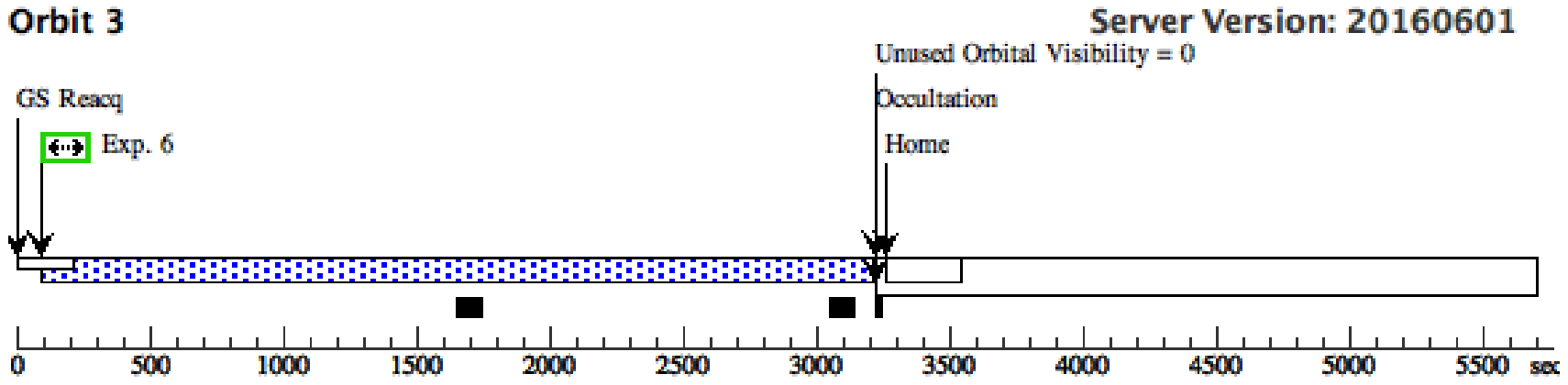
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.ta.718257)	(2) J1406+2509	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				62.3 Secs (62.3 Secs) *[==>]*	*[1]*
2	(COS.sp.718258)	(2) J1406+2509	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=1; FLASH=YES; BUFFER-TIME=1068			1178 Secs (1178 Secs) *[==>]*	*[1]*
3	(COS.sp.718258)	(2) J1406+2509	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FLASH=YES; FP-POS=2; BUFFER-TIME=1068			1178 Secs (1178 Secs) *[==>]*	*[1]*
4	(COS.sp.718259)	(2) J1406+2509	COS/FUV, TIME-TAG, PSA	G130M 1318 A	FP-POS=3; FLASH=YES; BUFFER-TIME=1309			1419 Secs (1419 Secs) *[==>]*	*[2]*
5	(COS.sp.718259)	(2) J1406+2509	COS/FUV, TIME-TAG, PSA	G130M 1318 A	FLASH=YES; FP-POS=4; BUFFER-TIME=1309			1419 Secs (1419 Secs) *[==>]*	*[2]*
6	(COS.sp.718260)	(2) J1406+2509	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FLASH=YES; FP-POS=4; BUFFER-TIME=1400			2941 Secs (2941 Secs) *[==>]*	*[3]*

Orbit Structure







Visit

Proposal 14145, Visit 04, scheduling Fri Jul 29 17:08:27 GMT 2016

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

Diagnostics

(Visit 04) Warning (Form): For the best data quality, it is strongly recommended that all four FP-POS positions be used when observing at a given COS CENWAVE setting.

Fixed Targets

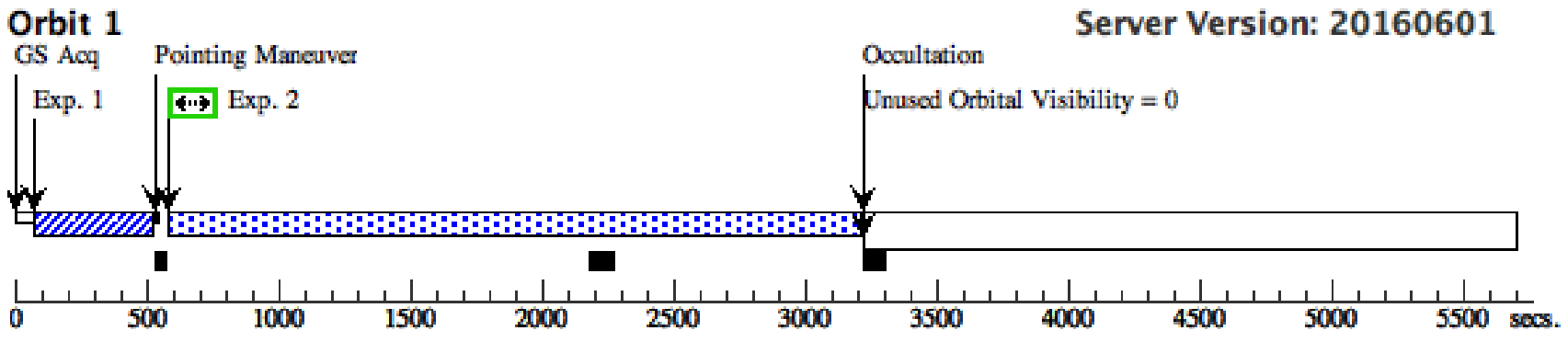
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	J1406+2509	RA: 14 06 26.6064 (211.6108600d) Dec: +25 09 21.05 (25.15585d) Equinox: J2000		V=16.54 AB(FUV)=18.32; AB(NUV)=17.24	Reference Frame: ICRS

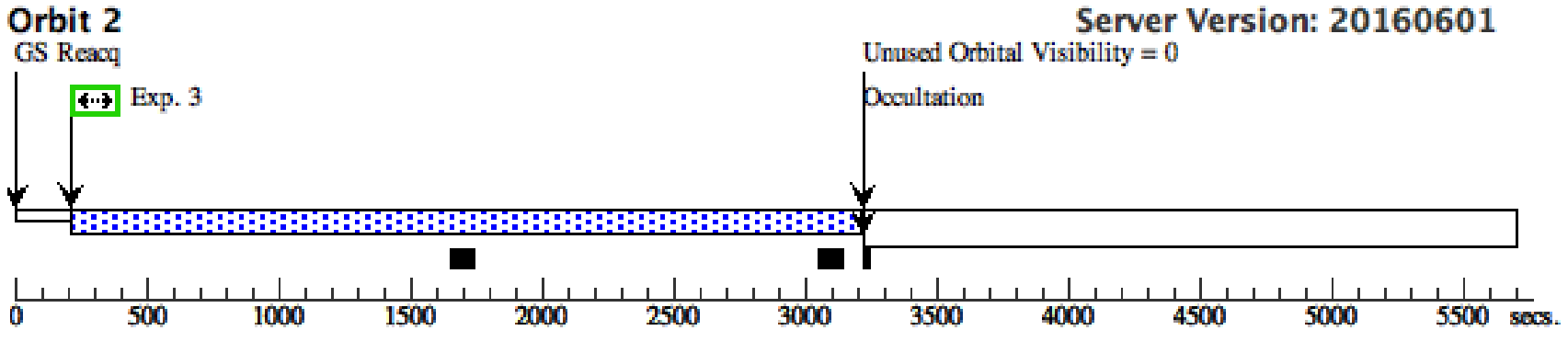
Comments: Extended=NO

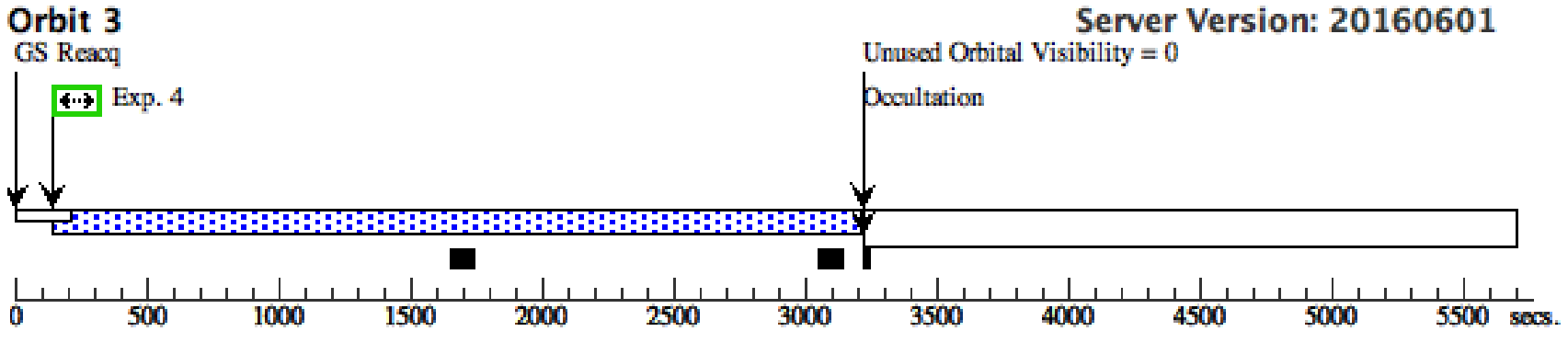
Exposures

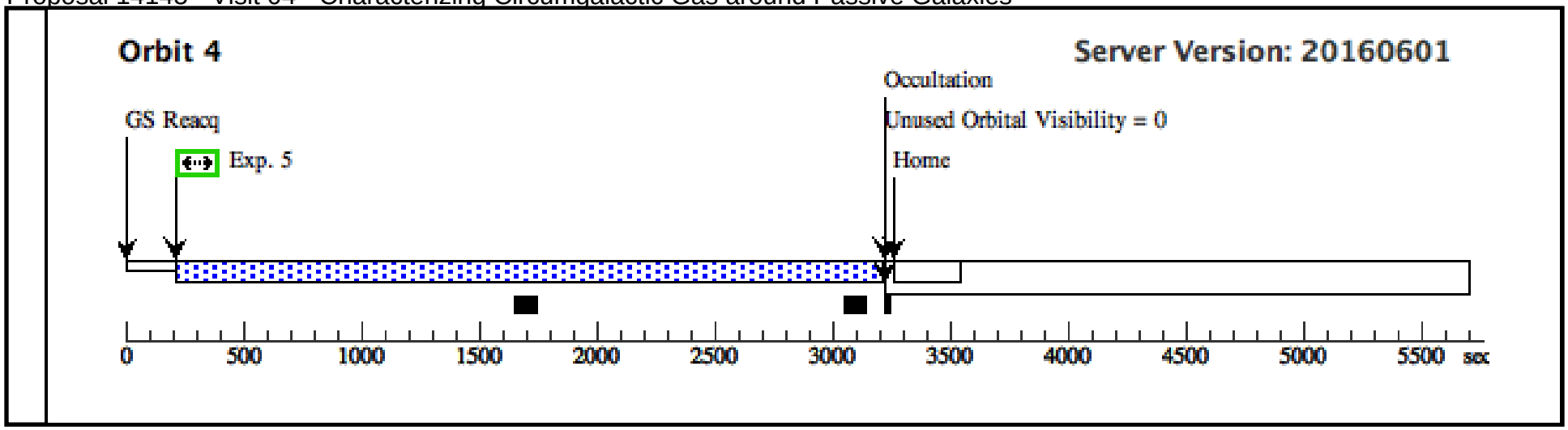
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.ta.718257)	(2) J1406+2509	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				62.3 Secs (62.3 Secs) *[==>]*	*[1]*
2	(COS.sp.718260)	(2) J1406+2509	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FLASH=YES; FP-POS=1; BUFFER-TIME=1400			2413 Secs (2413 Secs) *[==>]*	*[1]*
3	(COS.sp.718260)	(2) J1406+2509	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FLASH=YES; FP-POS=2; BUFFER-TIME=1400			2943 Secs (2943 Secs) *[==>]*	*[2]*
4	(COS.sp.718261)	(2) J1406+2509	COS/FUV, TIME-TAG, PSA	G160M 1611 A	FLASH=YES; FP-POS=3; BUFFER-TIME=1400			2943 Secs (2943 Secs) *[==>]*	*[3]*
5	(COS.sp.718261)	(2) J1406+2509	COS/FUV, TIME-TAG, PSA	G160M 1611 A	FLASH=YES; FP-POS=4; BUFFER-TIME=1400			2943 Secs (2943 Secs) *[==>]*	*[4]*

Orbit Structure








Orbit 4
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Occultation
GS Reacq
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1000
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3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 14145, Visit 05, completed Fri Jul 29 17:08:27 GMT 2016

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

Diagnostics

(Visit 05) Warning (Form): For the best data quality, it is strongly recommended that all four FP-POS positions be used when observing at a given COS CENWAVE setting.

Fixed Targets

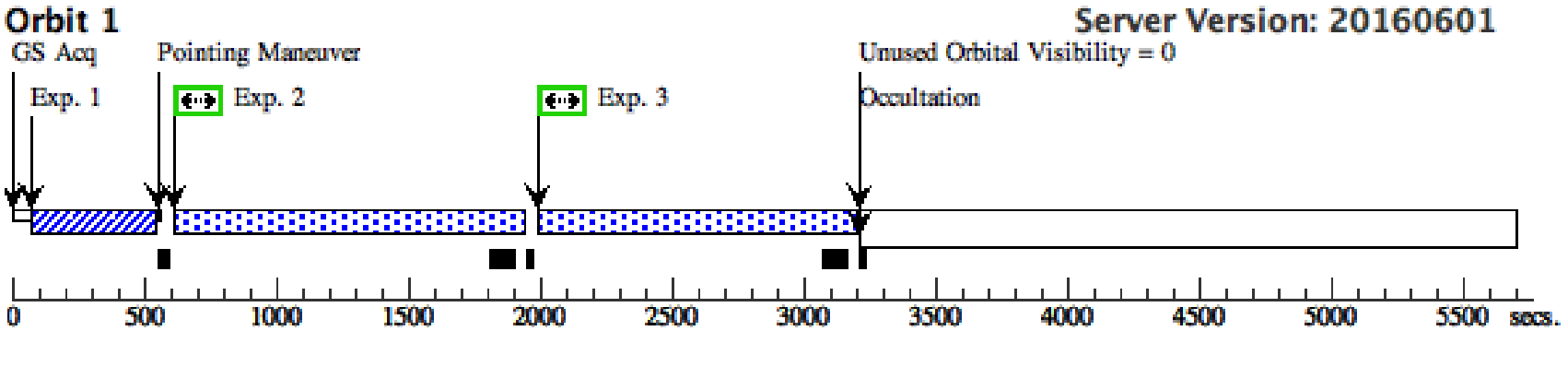
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	J1127+1154	RA: 11 27 56.7696 (171.9865400d) Dec: +11 54 27.12 (11.90753d) Equinox: J2000		V=17.02 AB(FUV)=18.09; AB(NUV)=17.54	Reference Frame: ICRS

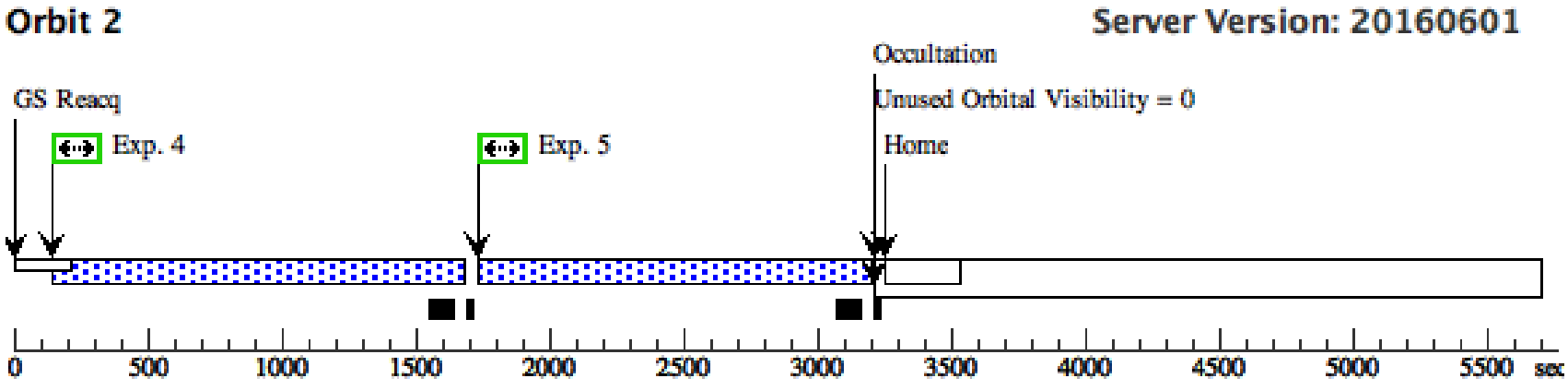
Comments: Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.ta.718469)	(3) J1127+1154	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				75.9 Secs (75.9 Secs) *[==>]*	 ***[1]***
2	(COS.sp.718473)	(3) J1127+1154	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=1; FLASH=YES; BUFFER-TIME=1050			1160 Secs (1160 Secs) *[==>]*	 ***[1]***
3	(COS.sp.718473)	(3) J1127+1154	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FLASH=YES; FP-POS=2; BUFFER-TIME=1049			1159 Secs (1159 Secs) *[==>]*	 ***[1]***
4	(COS.sp.718472)	(3) J1127+1154	COS/FUV, TIME-TAG, PSA	G130M 1318 A	FP-POS=3; FLASH=YES; BUFFER-TIME=1303			1413 Secs (1413 Secs) *[==>]*	 ***[2]***
5	(COS.sp.718472)	(3) J1127+1154	COS/FUV, TIME-TAG, PSA	G130M 1318 A	FLASH=YES; FP-POS=4; BUFFER-TIME=1304			1414 Secs (1414 Secs) *[==>]*	 ***[2]***

Orbit Structure





Visit

Proposal 14145, Visit 06, completed Fri Jul 29 17:08:27 GMT 2016

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

Diagnostics

(Visit 06) Warning (Form): For the best data quality, it is strongly recommended that all four FP-POS positions be used when observing at a given COS CENWAVE setting.

Fixed Targets

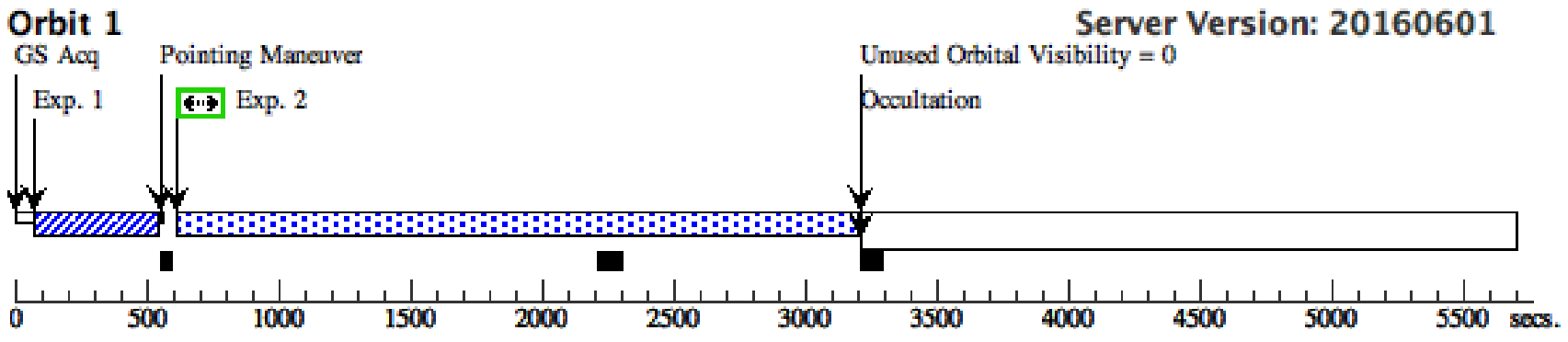
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	J1127+1154	RA: 11 27 56.7696 (171.9865400d) Dec: +11 54 27.12 (11.90753d) Equinox: J2000		V=17.02 AB(FUV)=18.09; AB(NUV)=17.54	Reference Frame: ICRS

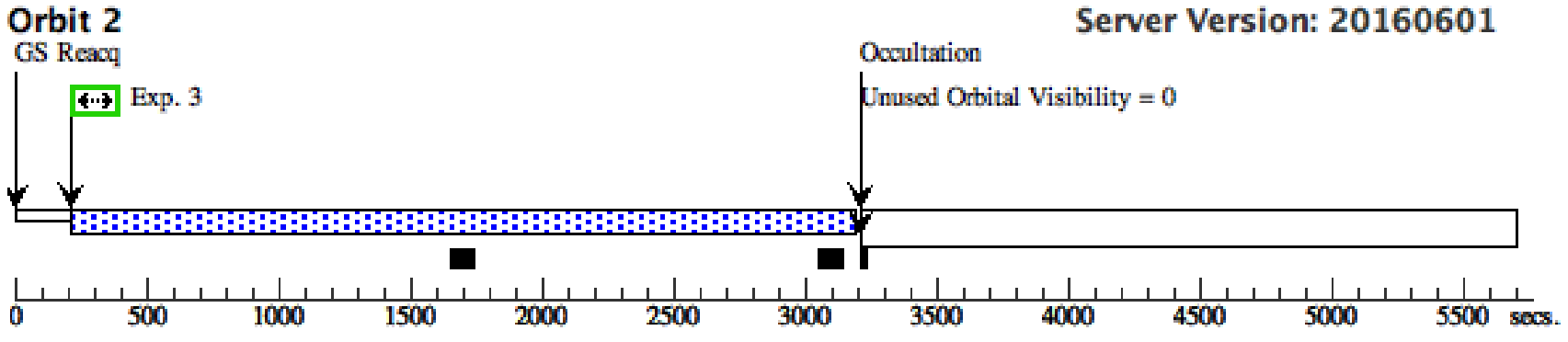
Comments: Extended=NO

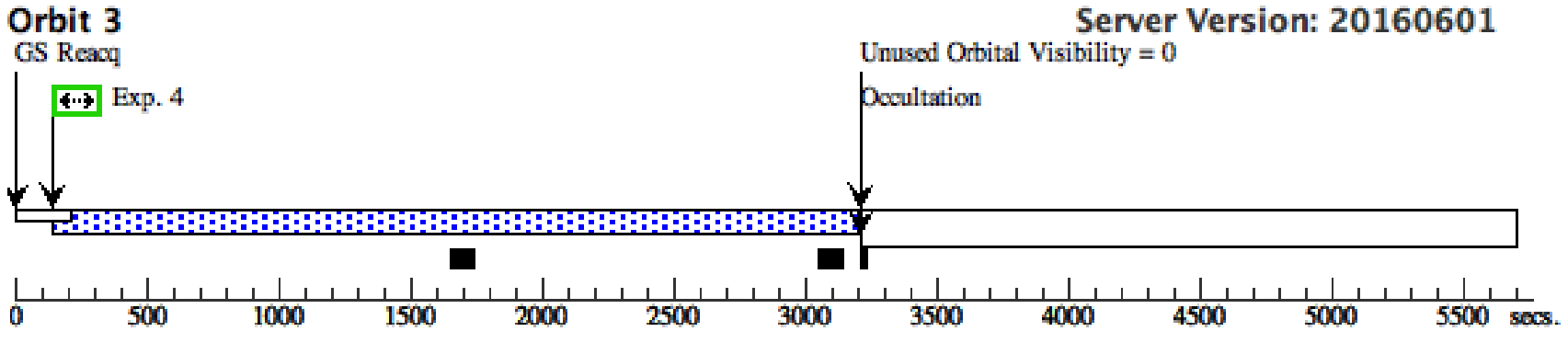
Exposures

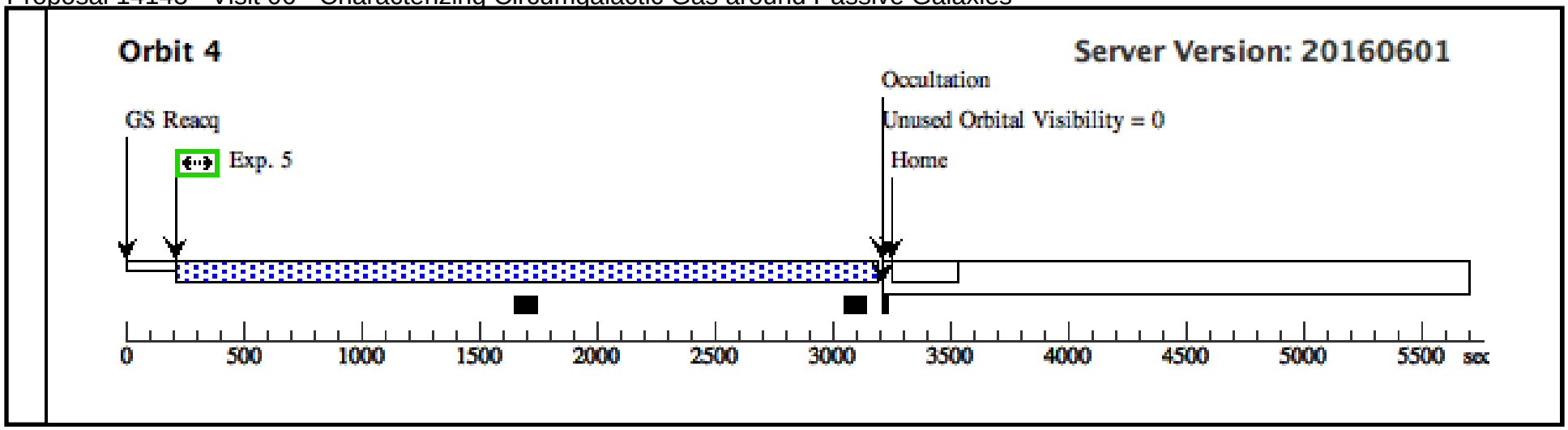
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.ta.718469)	(3) J1127+1154	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				75.9 Secs (75.9 Secs) *[==>]*	*[1]*
2	(COS.sp.718471)	(3) J1127+1154	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FLASH=YES; FP-POS=1; BUFFER-TIME=1400			2376 Secs (2376 Secs) *[==>]*	*[1]*
3	(COS.sp.718471)	(3) J1127+1154	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FLASH=YES; FP-POS=2; BUFFER-TIME=1400			2932 Secs (2932 Secs) *[==>]*	*[2]*
4	(COS.sp.718470)	(3) J1127+1154	COS/FUV, TIME-TAG, PSA	G160M 1611 A	FLASH=YES; FP-POS=3; BUFFER-TIME=1400			2932 Secs (2932 Secs) *[==>]*	*[3]*
5	(COS.sp.718470)	(3) J1127+1154	COS/FUV, TIME-TAG, PSA	G160M 1611 A	FLASH=YES; FP-POS=4; BUFFER-TIME=1400			2932 Secs (2932 Secs) *[==>]*	*[4]*

Orbit Structure








Orbit 4
Server Version: 20160601
Occultation
GS Reacq
Unused Orbital Visibility = 0
Exp. 5
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 14145, Visit 07, failed Fri Jul 29 17:08:27 GMT 2016

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

Diagnostics

(Visit 07) Warning (Form): For the best data quality, it is strongly recommended that all four FP-POS positions be used when observing at a given COS CENWAVE setting.

Fixed Targets

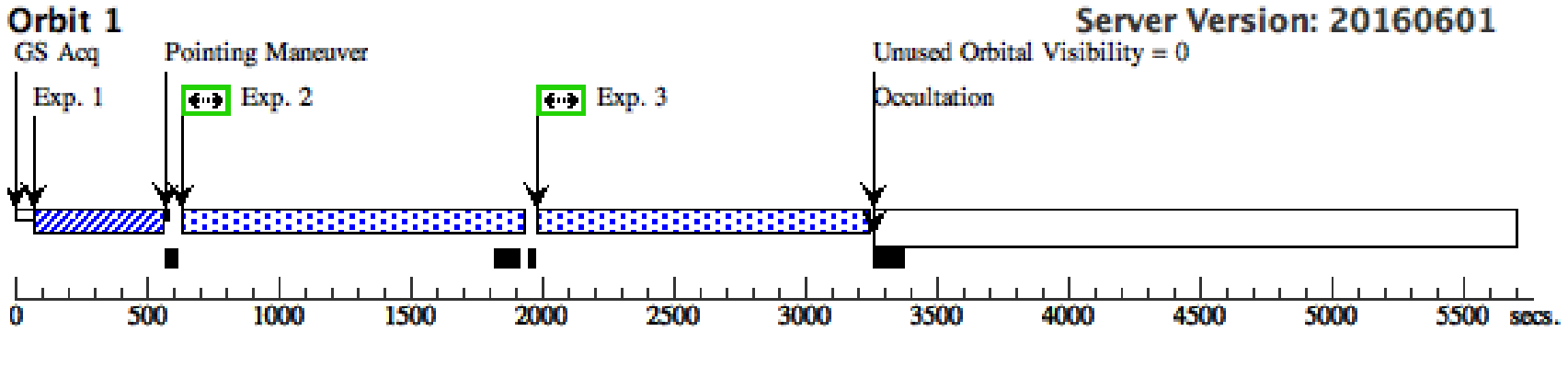
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	J1243+3539	RA: 12 43 7.5720 (190.7815500d) Dec: +35 39 7.20 (35.65200d) Equinox: J2000		V=17.33 AB(FUV)=18.37; AB(NUV)=17.84	Reference Frame: ICRS

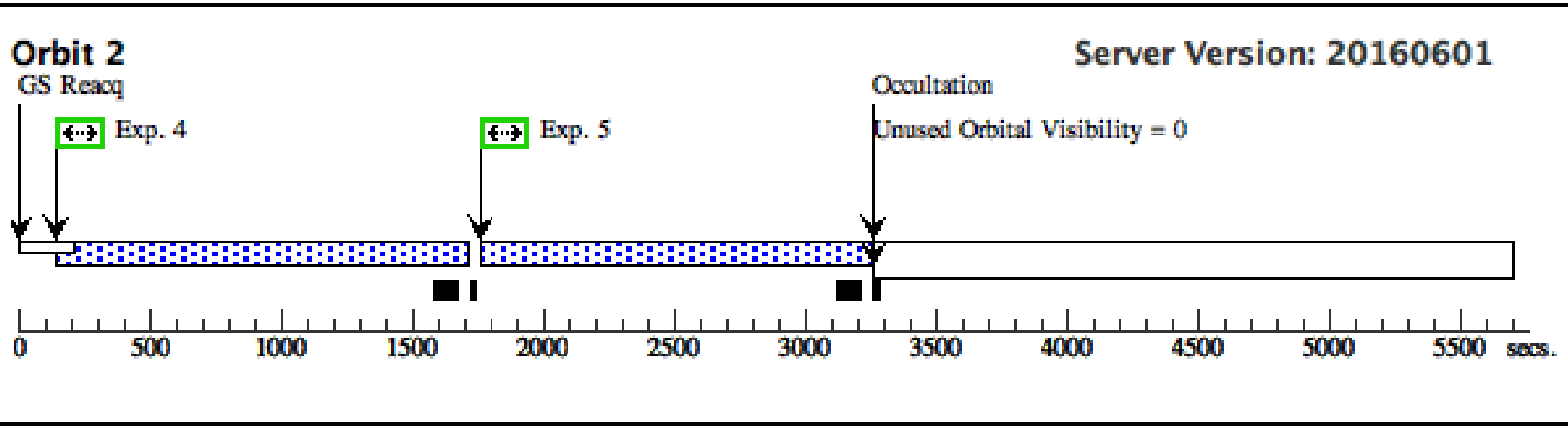
Comments: Extended=NO

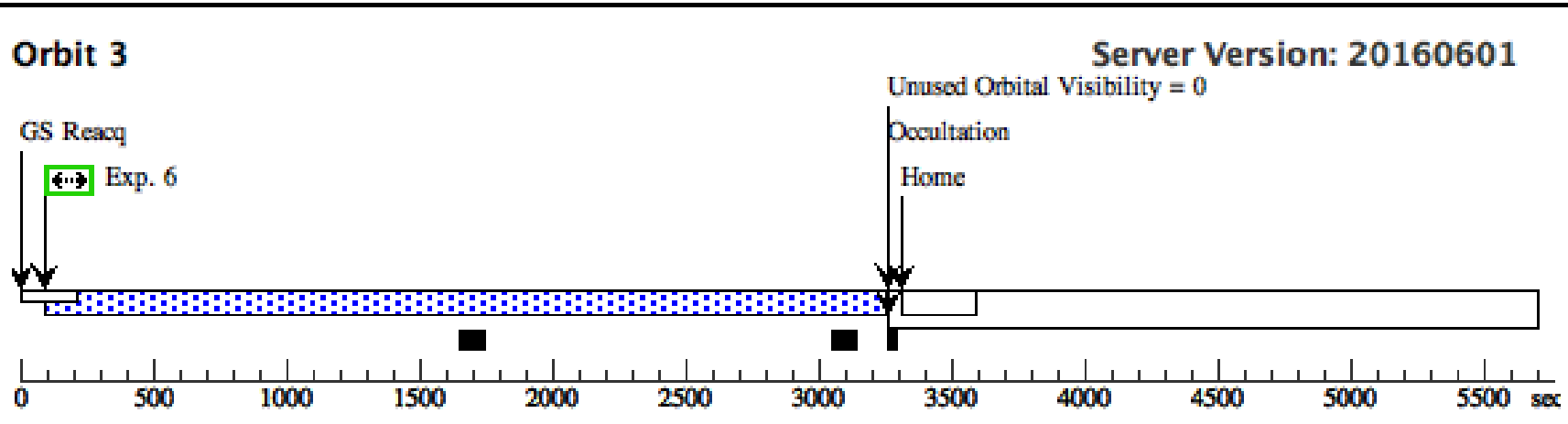
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.ta.758038)	(4) J1243+3539	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				86.1 Secs (86.1 Secs) *[==>]*	*[1]*
2	(COS.sp.718475)	(4) J1243+3539	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=1; FLASH=YES; BUFFER-TIME=1035			1135 Secs (1135 Secs) *[==>]*	*[1]*
3	(COS.sp.718475)	(4) J1243+3539	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FLASH=YES; FP-POS=2; BUFFER-TIME=1144			1211 Secs (1211 Secs) *[==>]*	*[1]*
4	(COS.sp.718476)	(4) J1243+3539	COS/FUV, TIME-TAG, PSA	G130M 1318 A	FP-POS=3; FLASH=YES; BUFFER-TIME=1328			1438 Secs (1438 Secs) *[==>]*	*[2]*
5	(COS.sp.718476)	(4) J1243+3539	COS/FUV, TIME-TAG, PSA	G130M 1318 A	FLASH=YES; FP-POS=4; BUFFER-TIME=1328			1438 Secs (1438 Secs) *[==>]*	*[2]*
6	(COS.sp.718477)	(4) J1243+3539	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FLASH=YES; FP-POS=4; BUFFER-TIME=1400			2979 Secs (2979 Secs) *[==>]*	*[3]*

Orbit Structure







Visit

Proposal 14145, Visit 11 Fri Jul 29 17:08:27 GMT 2016

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

Diagnostics

(Visit 11) Warning (Form): For the best data quality, it is strongly recommended that all four FP-POS positions be used when observing at a given COS CENWAVE setting.

Fixed Targets

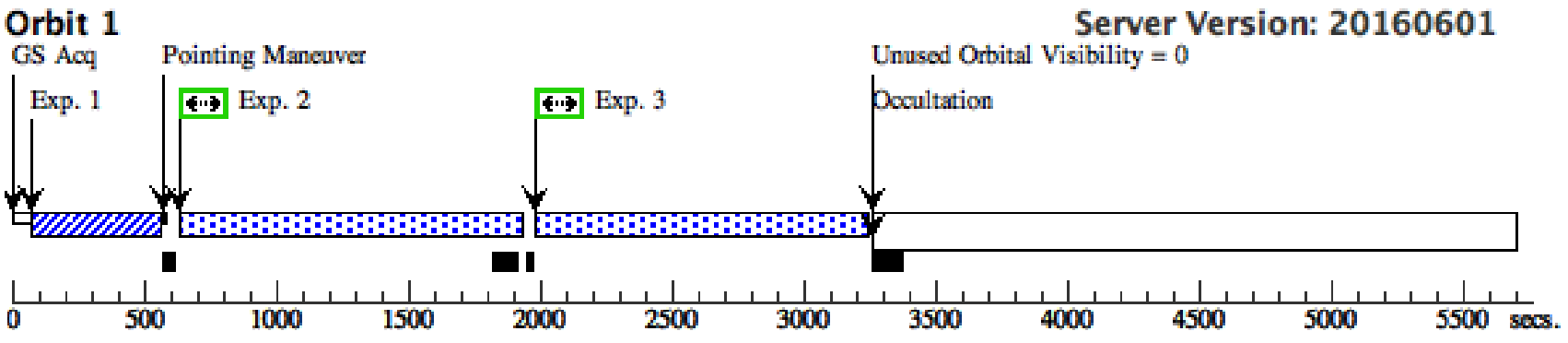
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	J1243+3539	RA: 12 43 7.5720 (190.7815500d) Dec: +35 39 7.20 (35.65200d) Equinox: J2000		V=17.33 AB(FUV)=18.37; AB(NUV)=17.84	Reference Frame: ICRS

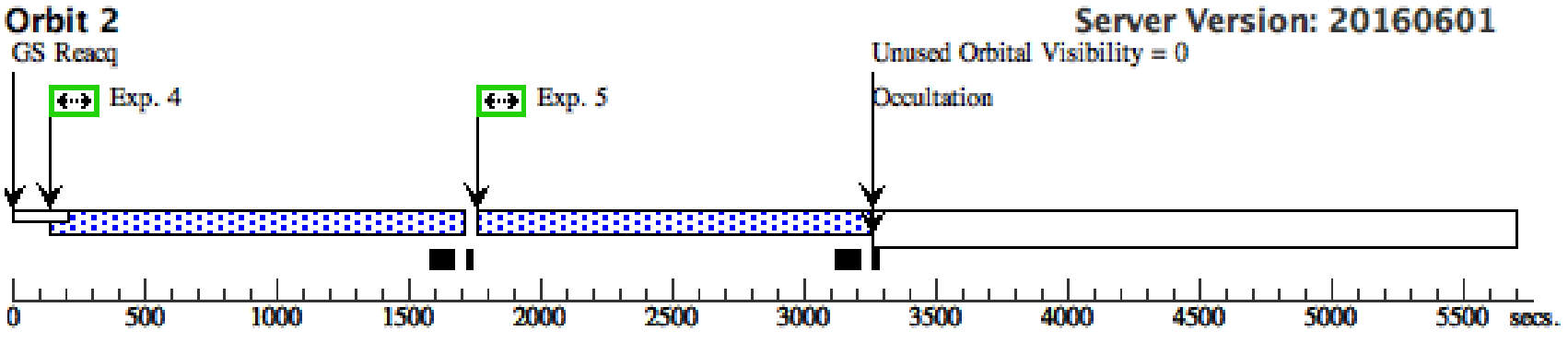
Comments: Extended=NO

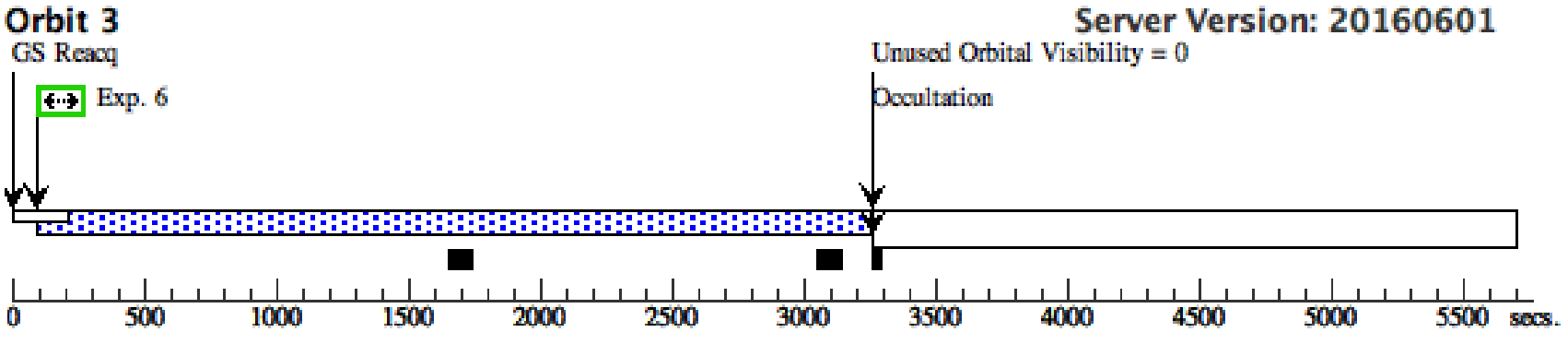
Exposures

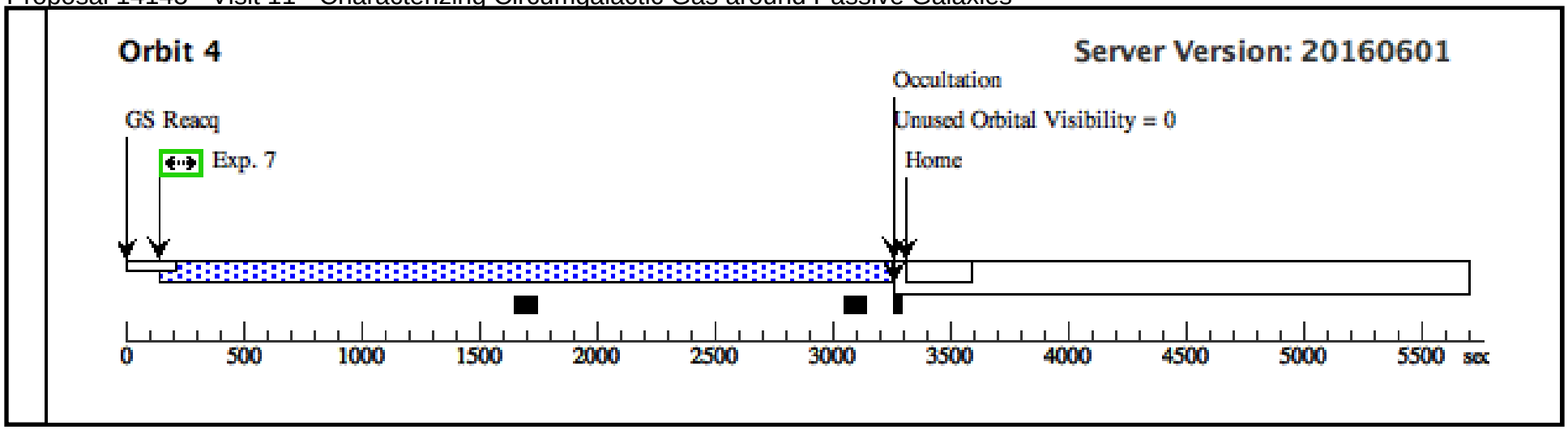
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.ta.758038)	(4) J1243+3539	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				86.1 Secs (86.1 Secs) *[==>]*	***[1]***
2	(COS.sp.718475)	(4) J1243+3539	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=1; FLASH=YES; BUFFER-TIME=1035			1135 Secs (1135 Secs) *[==>]*	***[1]***
3	(COS.sp.718475)	(4) J1243+3539	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FLASH=YES; FP-POS=2; BUFFER-TIME=1144			1211 Secs (1211 Secs) *[==>]*	***[1]***
4	(COS.sp.718476)	(4) J1243+3539	COS/FUV, TIME-TAG, PSA	G130M 1318 A	FP-POS=3; FLASH=YES; BUFFER-TIME=1328			1438 Secs (1438 Secs) *[==>]*	***[2]***
5	(COS.sp.718476)	(4) J1243+3539	COS/FUV, TIME-TAG, PSA	G130M 1318 A	FLASH=YES; FP-POS=4; BUFFER-TIME=1328			1438 Secs (1438 Secs) *[==>]*	***[2]***
6	(COS.sp.718477)	(4) J1243+3539	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FLASH=YES; FP-POS=4; BUFFER-TIME=1400			2979 Secs (2979 Secs) *[==>]*	***[3]***
7	(COS.sp.718478)	(4) J1243+3539	COS/FUV, TIME-TAG, PSA	G160M 1611 A	FLASH=YES; FP-POS=4; BUFFER-TIME=1400			2981 Secs (2981 Secs) *[==>]*	***[4]***

Orbit Structure








Orbit 4
Server Version: 20160601
Occultation
GS Reacq
Unused Orbital Visibility = 0
Exp. 7
Home
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500
1000
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2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 14145, Visit 08, failed Fri Jul 29 17:08:27 GMT 2016

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

Diagnostics

(Visit 08) Warning (Form): For the best data quality, it is strongly recommended that all four FP-POS positions be used when observing at a given COS CENWAVE setting.

Fixed Targets

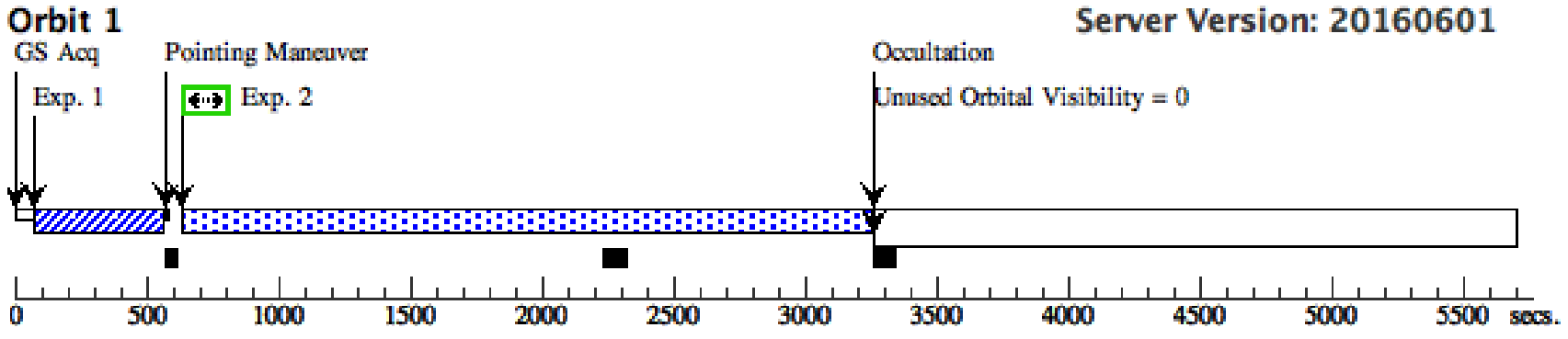
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	J1243+3539	RA: 12 43 7.5720 (190.7815500d) Dec: +35 39 7.20 (35.65200d) Equinox: J2000		V=17.33 AB(FUV)=18.37; AB(NUV)=17.84	Reference Frame: ICRS

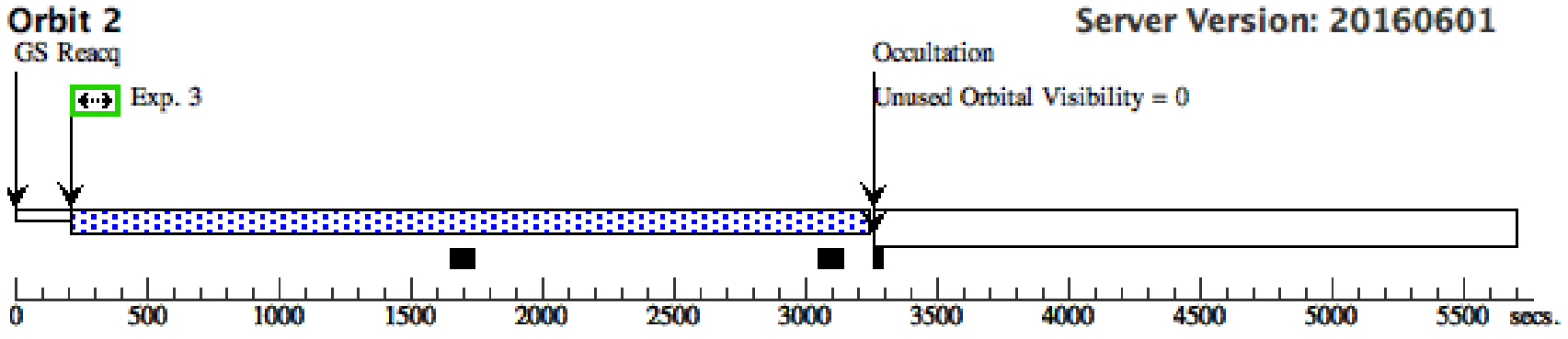
Comments: Extended=NO

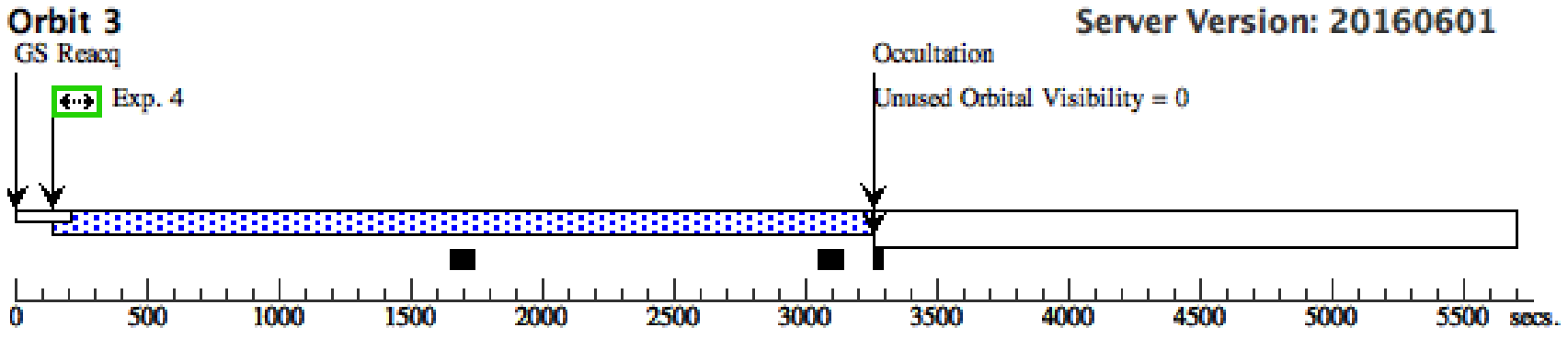
Exposures

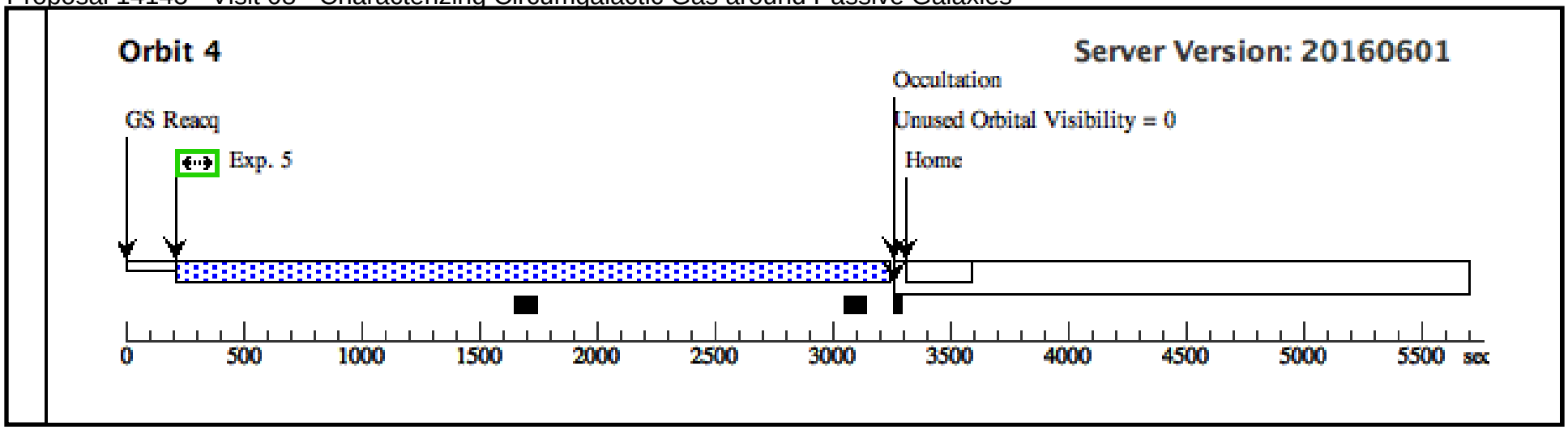
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.ta.758038)	(4) J1243+3539	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				86.1 Secs (86.1 Secs) *[==>]*	*[1]*
2	(COS.sp.718477)	(4) J1243+3539	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FLASH=YES; FP-POS=1; BUFFER-TIME=1400			2403 Secs (2403 Secs) *[==>]*	*[1]*
3	(COS.sp.718477)	(4) J1243+3539	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FLASH=YES; FP-POS=2; BUFFER-TIME=1400			2981 Secs (2981 Secs) *[==>]*	*[2]*
4	(COS.sp.718478)	(4) J1243+3539	COS/FUV, TIME-TAG, PSA	G160M 1611 A	FLASH=YES; FP-POS=3; BUFFER-TIME=1400			2981 Secs (2981 Secs) *[==>]*	*[3]*
5	(COS.sp.718478)	(4) J1243+3539	COS/FUV, TIME-TAG, PSA	G160M 1611 A	FLASH=YES; FP-POS=4; BUFFER-TIME=1400			2981 Secs (2981 Secs) *[==>]*	*[4]*

Orbit Structure








Orbit 4
Server Version: 20160601
Occultation
GS Reacq
Unused Orbital Visibility = 0
Exp. 5
Home
0
500
1000
1500
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2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 14145, Visit 09, scheduling Fri Jul 29 17:08:27 GMT 2016

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

Diagnostics

(Visit 09) Warning (Form): For the best data quality, it is strongly recommended that all four FP-POS positions be used when observing at a given COS CENWAVE setting.

Fixed Targets

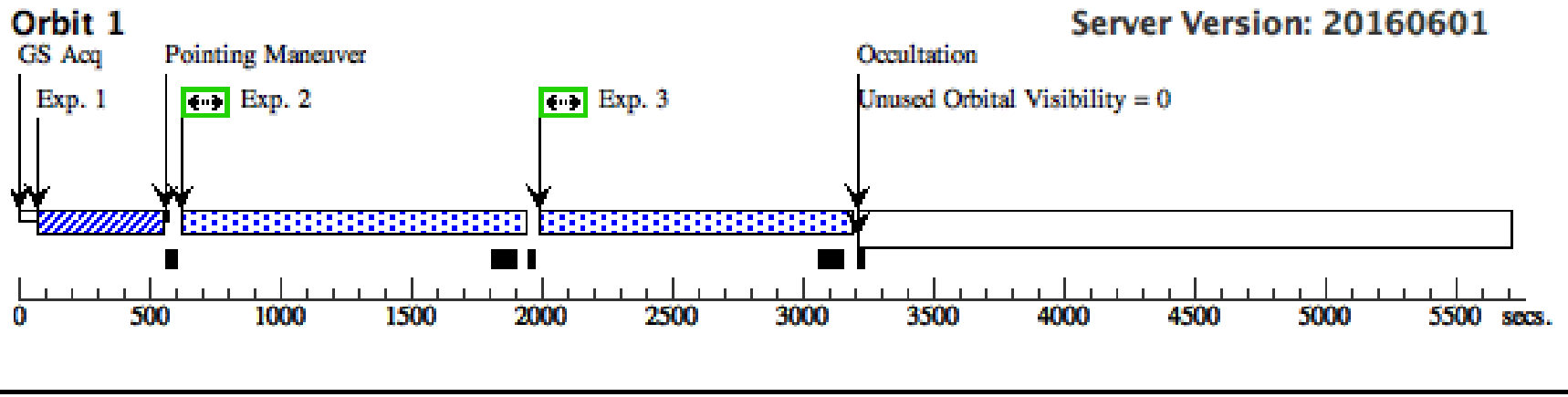
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(5)	J0246-0059	RA: 02 46 51.9130 (41.7163042d) Dec: -00 59 31.04 (-.99196d) Equinox: J2000		V=16.90 AB(FUV)=18.03; AB(NUV)=17.62	Reference Frame: ICRS

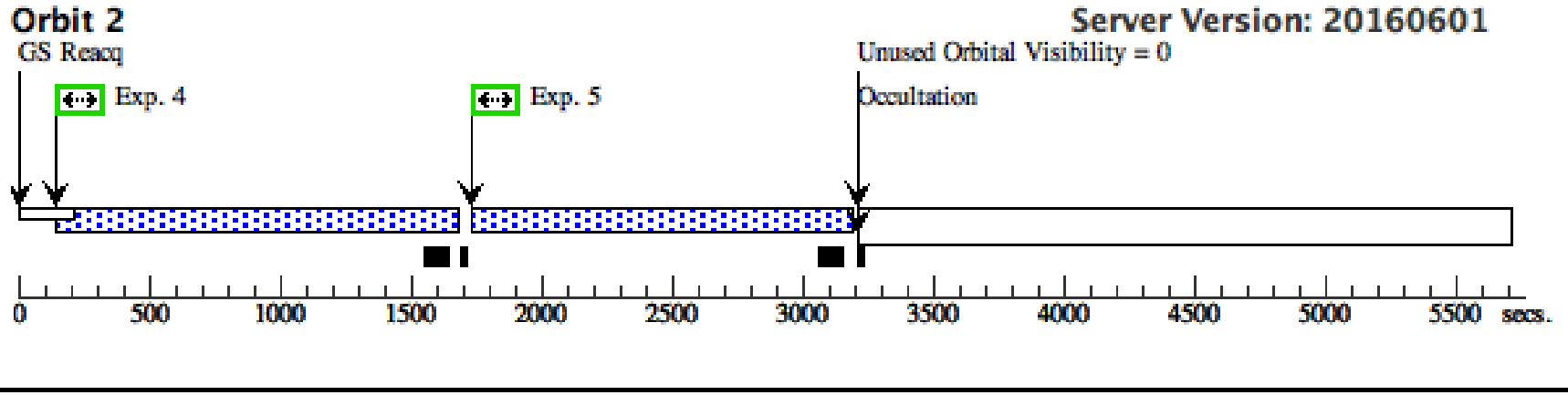
Comments: Extended=NO

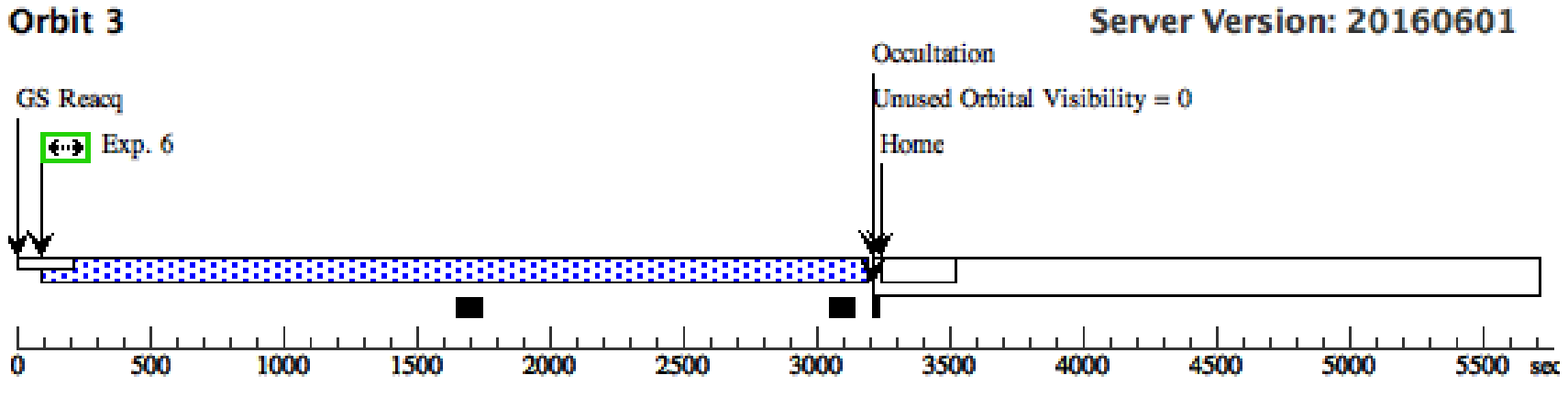
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.ta.718482)	(5) J0246-0059	COS/NUV, ACQ/IMAGE, PSA	MIRRORB		GS ACQ SCENARIO BASE1B3		80.8 Secs (80.8 Secs) *[==>]*	***[1]***
2	(COS.sp.718483)	(5) J0246-0059	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=1; FLASH=YES; BUFFER-TIME=1041			1151 Secs (1151 Secs) *[==>]*	***[1]***
3	(COS.sp.718483)	(5) J0246-0059	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FLASH=YES; FP-POS=2; BUFFER-TIME=1040			1150 Secs (1150 Secs) *[==>]*	***[1]***
4	(COS.sp.718484)	(5) J0246-0059	COS/FUV, TIME-TAG, PSA	G130M 1318 A	FP-POS=3; FLASH=YES; BUFFER-TIME=1303			1413 Secs (1413 Secs) *[==>]*	***[2]***
5	(COS.sp.718484)	(5) J0246-0059	COS/FUV, TIME-TAG, PSA	G130M 1318 A	FLASH=YES; FP-POS=4; BUFFER-TIME=1296			1406 Secs (1406 Secs) *[==>]*	***[2]***
6	(COS.sp.718489)	(5) J0246-0059	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FLASH=YES; FP-POS=4; BUFFER-TIME=1400			2922 Secs (2922 Secs) *[==>]*	***[3]***

Orbit Structure







Visit

Proposal 14145, Visit 10, scheduling Fri Jul 29 17:08:27 GMT 2016

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

Diagnostics

(Visit 10) Warning (Form): For the best data quality, it is strongly recommended that all four FP-POS positions be used when observing at a given COS CENWAVE setting.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(5)	J0246-0059	RA: 02 46 51.9130 (41.7163042d) Dec: -00 59 31.04 (-.99196d) Equinox: J2000		V=16.90 AB(FUV)=18.03; AB(NUV)=17.62	Reference Frame: ICRS

Comments: Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.ta.718482)	(5) J0246-0059	COS/NUV, ACQ/IMAGE, PSA	MIRRORB		GS ACQ SCENARIO BASE1B3		80.8 Secs (80.8 Secs) *[==>]*	***[1]***
2	(COS.sp.718489)	(5) J0246-0059	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FLASH=YES; FP-POS=1; BUFFER-TIME=1400			2358 Secs (2358 Secs) *[==>]*	***[1]***
3	(COS.sp.718487)	(5) J0246-0059	COS/FUV, TIME-TAG, PSA	G160M 1611 A	FLASH=YES; FP-POS=2; BUFFER-TIME=1400			2924 Secs (2924 Secs) *[==>]*	***[2]***
4	(COS.sp.718487)	(5) J0246-0059	COS/FUV, TIME-TAG, PSA	G160M 1611 A	FLASH=YES; FP-POS=3; BUFFER-TIME=1400			2924 Secs (2924 Secs) *[==>]*	***[3]***

Orbit Structure