



# 13833 - Characterizing the cool and warm-hot intergalactic medium in clusters at $z < 0.4$

Cycle: 22, Proposal Category: GO

(UV Initiative)

(Availability Mode: SUPPORTED)

## INVESTIGATORS

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## VISITS

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
01	(1) VV2006-J095243.0+515121	COS/FUV COS/NUV	4	22-Jul-2014 21:19:08.0	yes
02	(1) VV2006-J095243.0+515121	COS/FUV COS/NUV	4	22-Jul-2014 21:19:10.0	yes

Proposal 13833 (STScI Edit Number: 0, Created: Tuesday, July 22, 2014 8:19:29 PM EST) - Overview

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
03	(1) VV2006-J095243.0+515121	COS/FUV COS/NUV	4	22-Jul-2014 21:19:11.0	yes
04	(2) VV2006-J095240.2+515250	COS/FUV COS/NUV	4	22-Jul-2014 21:19:13.0	yes
05	(2) VV2006-J095240.2+515250	COS/FUV COS/NUV	2	22-Jul-2014 21:19:14.0	yes
06	(2) VV2006-J095240.2+515250	COS/FUV COS/NUV	4	22-Jul-2014 21:19:16.0	yes
07	(2) VV2006-J095240.2+515250	COS/FUV COS/NUV	4	22-Jul-2014 21:19:17.0	yes
08	(3) VV2006-J101814.0+054625	COS/FUV COS/NUV	4	22-Jul-2014 21:19:18.0	yes
09	(4) SDSS-J104741.75+151332.2	COS/FUV COS/NUV	3	22-Jul-2014 21:19:19.0	yes
10	(4) SDSS-J104741.75+151332.2	COS/FUV COS/NUV	4	22-Jul-2014 21:19:20.0	yes
11	(4) SDSS-J104741.75+151332.2	COS/FUV COS/NUV	3	22-Jul-2014 21:19:21.0	yes
12	(5) VV2006-J125901.7+413055	COS/FUV COS/NUV	3	22-Jul-2014 21:19:22.0	yes
13	(5) VV2006-J125901.7+413055	COS/FUV COS/NUV	5	22-Jul-2014 21:19:24.0	yes
14	(6) SDSS-J141309.14+092011.2	COS/FUV COS/NUV	5	22-Jul-2014 21:19:27.0	yes

53 Total Orbits Used

**ABSTRACT**

Dedicated surveys with HST/COS and previous UV spectrometers have revealed that present-day galaxies of essentially all mass and spectral-type harbor a substantial reservoir of cool ( $T \sim 10^4 \text{K}$ ) and warm ( $T \sim 10^5 - 10^6 \text{K}$ ) gas in their halos, defining a circumgalactic medium (CGM) around galaxies. At much higher halo mass scales, groups and clusters exhibit a hot ( $T \sim 10^6 - 10^7 \text{K}$ ) tenuous plasma designated the intragroup or intracluster medium (IGrM, ICM). Although these massive structures hosts up to hundreds of individual galaxies, it is unknown whether the IGrM/ICM also contains cool or warm phases. Numerical simulations offer some guidance, predicting that the outer environment is warm ( $T < 10^6 \text{K}$ ) and recent work on Virgo reveals a cool phase close to its virial radius. Here we venture into this unexplored territory, and propose to use HST/COS spectroscopy of 6 background QSOs to search for the cool (narrow HI Ly $\alpha$ ) and the warm/highly-ionized gas (broad HI Ly $\alpha$  and OVI) at impact parameters of  $\sim 0.2 - 3 R_{200}$  from 11 clusters lying in the foreground. We will use both G130M and G160M gratings to cover the full FUV spectral range to simultaneously survey HI Ly $\alpha$  and OVI at the redshifts of the intervening structures. This first systematic study of cool and warm gas in massive, low- $z$  halos will enable us to: (1) quantify the contribution of the warm-hot intergalactic medium (WHIM) within or near massive groups and clusters; (2) explore the signatures of tidal and ram-pressure stripping of group/cluster members; (3) search for evidence of expulsion of baryons via feedback processes; and (4) search for evidence of cold/hot accretion modes in these massive halos.

## **OBSERVING DESCRIPTION**

Our clusters were chosen from the GMBCG catalog (Hao et al. 2010) which consists of  $> 55000$  rich clusters at  $0.1 < z < 0.55$  based on SDSS DR7 data. This catalog has high purity and completeness across the full redshift range and is approximately volume limited up to redshift  $z \sim 0.4$ . Hao et al. showed that a minimum richness value of  $N_{\text{gal}} \sim 10-15$  is enough to ensure a high completeness and reliability of the clusters. We therefore adopted a minimum richness of 10 for the catalogued clusters (these values correspond to roughly  $M \sim 10^{14} M_{\text{sun}}$ ; note that our final list have  $N_{\text{gal}}$  typically exceeding those values). Although the GMBCG detection algorithm is mainly based on photometry, an important component is the use of brightest cluster galaxies (BCGs) as cluster probes. Around 20000 out of 55000 of these BCGs have spectroscopic redshifts ( $\Delta z \sim 0.0001 - 0.0002$ ) which allow velocity precisions of  $\sim 30 \text{ km/s}$  at those clusters' rest-frames. We use the BCG spectroscopic redshift as the cluster redshift when available.

The QSOs were chosen from the combination of SDSS DR7 data (Schneider et al. 2010), BOSS data (Paris et al. 2012) and compilations from other catalogs intersecting the SDSS volume showing FUV  $< 19 \text{ AB}$  from the GALEX database. These comprise a large number ( $> 2000$ ) of reliably identified QSOs with well known spectroscopic redshifts which are bright enough for feasible FUV spectroscopy. We cross-matched these QSOs with the GMBCG catalog and looked for QSO-cluster pairs at separations  $< 2 R_{200}$ . We discarded QSOs showing intervening strong MgII absorption in their optical spectra to avoid possible Lyman Limit Systems (LLS) blocking part of our FUV

range. We prioritized QSOs with multiple cluster matches and high FUV fluxes to enable a S/N  $\sim 10$  spectrum to be observed in feasible exposure times.

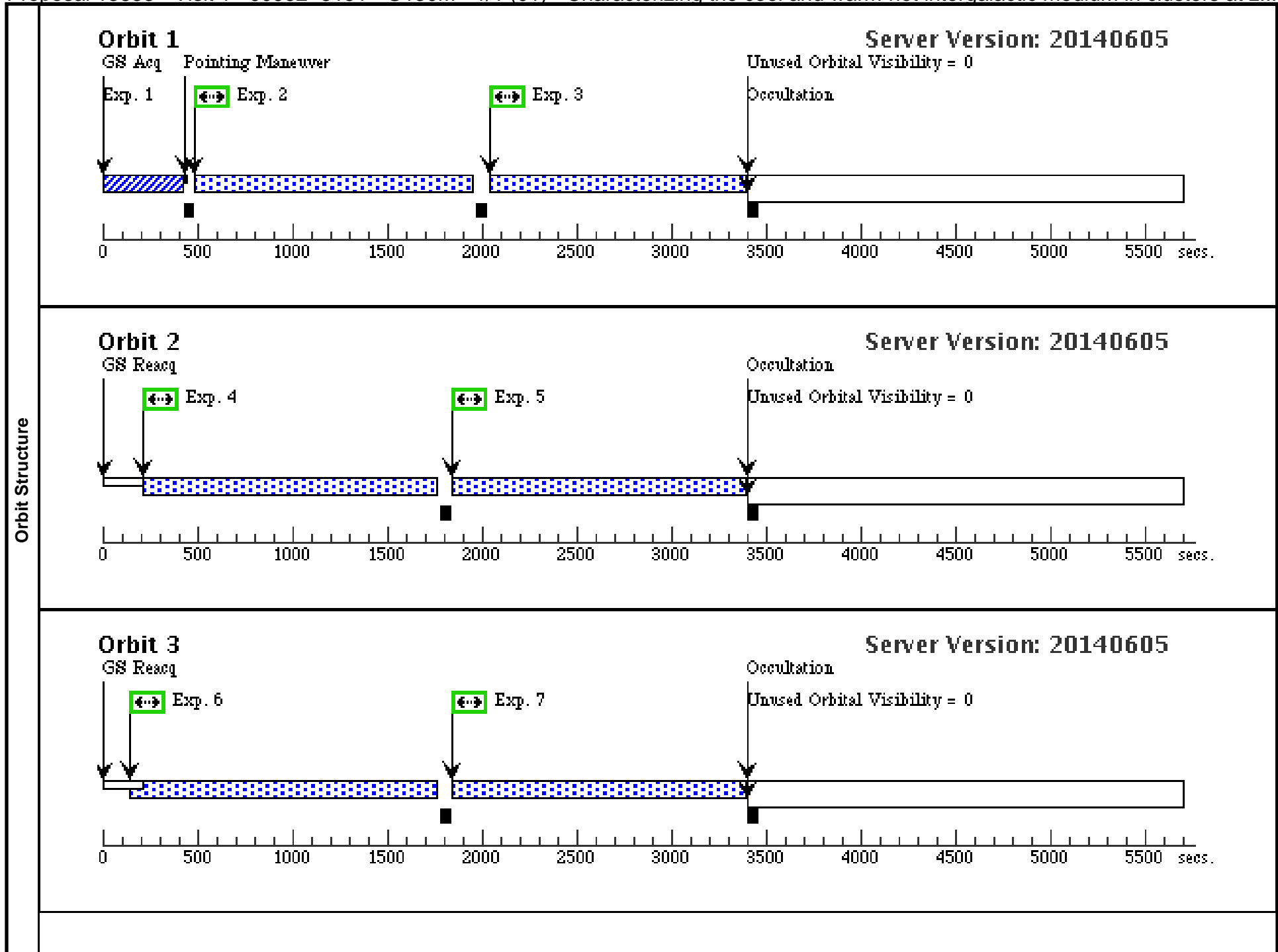
A minimum S/N  $\sim 10$  per resolution element is desirable as our experience with existing HST/COS spectra suggests that for S/N  $< 10$  it becomes difficult to independently constrain the column density and Doppler parameter. Finally, we selected 6 QSOs whose sightlines intersect 11 clusters. Our targets are located in safe regions (within the HST/COS field-of-view) where no objects are brighter than the targets themselves and we have successfully acquired objects of similar magnitudes in previous HST/COS observation.

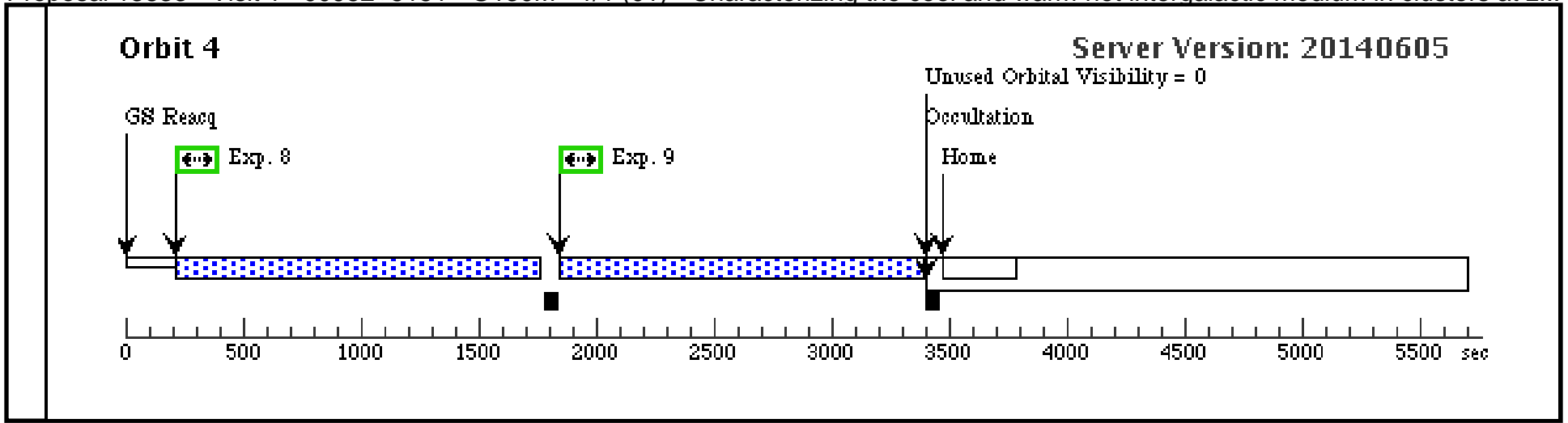
Scientifically, we wish to probe the IGrM/ICM for (i) low-ionization, cool ( $T \sim 10^4$  K) gas and (ii) high-ionization and/or warm ( $T \sim 10^5$  K) gas. Following previous works, the optimal UV transitions for these two phases are the HI Ly-alpha line and the OVI doublet, respectively. HST/COS, in its highest resolution mode, will be required to cover these transitions and to resolve them for precise column density measurements and kinematics. We have chosen the grating(s) and tilt(s) for each cluster that covers both of these key diagnostics. In most cases, this demands both the G130M and G160M gratings.

<b>Visit</b>	<p><b>Proposal 13833, Visit 1 - J0952+5151 - G130M - 1/1 (01), implementation</b> <span style="float: right;">Wed Jul 23 01:19:29 GMT 2014</span></p> <p><b>Diagnostic Status: No Diagnostics</b></p> <p>Scientific Instruments: COS/NUV, COS/FUV</p> <p>Special Requirements: (none)</p> <p><i>Comments: This visit corresponds to the visit 1/1 of the J0952+5151 using G130M:</i></p> <ul style="list-style-type: none"> <li>- 4 orbits in total</li> <li>- 2 central wavelengths (1309 and 1291A)</li> <li>- 4 FP-POS in total in each central wavelength (2 FP-POS per orbit)</li> </ul>					
	<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>
(1)		VV2006- J095243.0+515121	RA: 09 52 43.0476 (148.1793650d) Dec: +51 51 21.15 (51.85588d) Equinox: J2000		V=17.97 FUV=18.71	Reference Frame: ICRS
<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p>						

Proposal 13833 - Visit 1 - J0952+5151 - G130M - 1/1 (01) - Characterizing the cool and warm-hot intergalactic medium in clusters at z...

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
Exposures	1	ACQ (COS.ta.618 969)	(1) VV2006-J095243 .0+515121	COS/NUV, ACQ/IMAGE, PSA	MIRRORA			10 Secs (10 Secs) [==>]	[1]
	2	G130M - 1309 - FP1 - o1 (COS.sp.618 773)	(1) VV2006-J095243 .0+515121	COS/FUV, TIME-TAG, PSA	G130M 1309 A	FP-POS=1; BUFFER-TIME=38 00		1300 Secs (1300 Secs) [==>]	[1]
	3	G130M - 1309 - FP2 - o1 (COS.sp.618 773)	(1) VV2006-J095243 .0+515121	COS/FUV, TIME-TAG, PSA	G130M 1309 A	FP-POS=2; BUFFER-TIME=38 00		1301 Secs (1301 Secs) [==>]	[1]
	4	G130M - 1309 - FP3 - o2 (COS.sp.618 773)	(1) VV2006-J095243 .0+515121	COS/FUV, TIME-TAG, PSA	G130M 1309 A	FP-POS=3; BUFFER-TIME=38 00		1495 Secs (1495 Secs) [==>]	[2]
	5	G130M - 1309 - FP4 - o2 (COS.sp.618 773)	(1) VV2006-J095243 .0+515121	COS/FUV, TIME-TAG, PSA	G130M 1309 A	FP-POS=4; BUFFER-TIME=38 00		1494 Secs (1494 Secs) [==>]	[2]
	6	G130M - 1291 - FP1 - o3 (COS.sp.618 965)	(1) VV2006-J095243 .0+515121	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=1; BUFFER-TIME=36 00		1494 Secs (1494 Secs) [==>]	[3]
	7	G130M - 1291 - FP2 - o3 (COS.sp.618 965)	(1) VV2006-J095243 .0+515121	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=2; BUFFER-TIME=36 00		1495 Secs (1495 Secs) [==>]	[3]
	8	G130M - 1291 - FP3 - o4 (COS.sp.618 965)	(1) VV2006-J095243 .0+515121	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=36 00		1495 Secs (1495 Secs) [==>]	[4]
	9	G130M - 1291 - FP4 - o4 (COS.sp.618 965)	(1) VV2006-J095243 .0+515121	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=4; BUFFER-TIME=36 00		1494 Secs (1494 Secs) [==>]	[4]

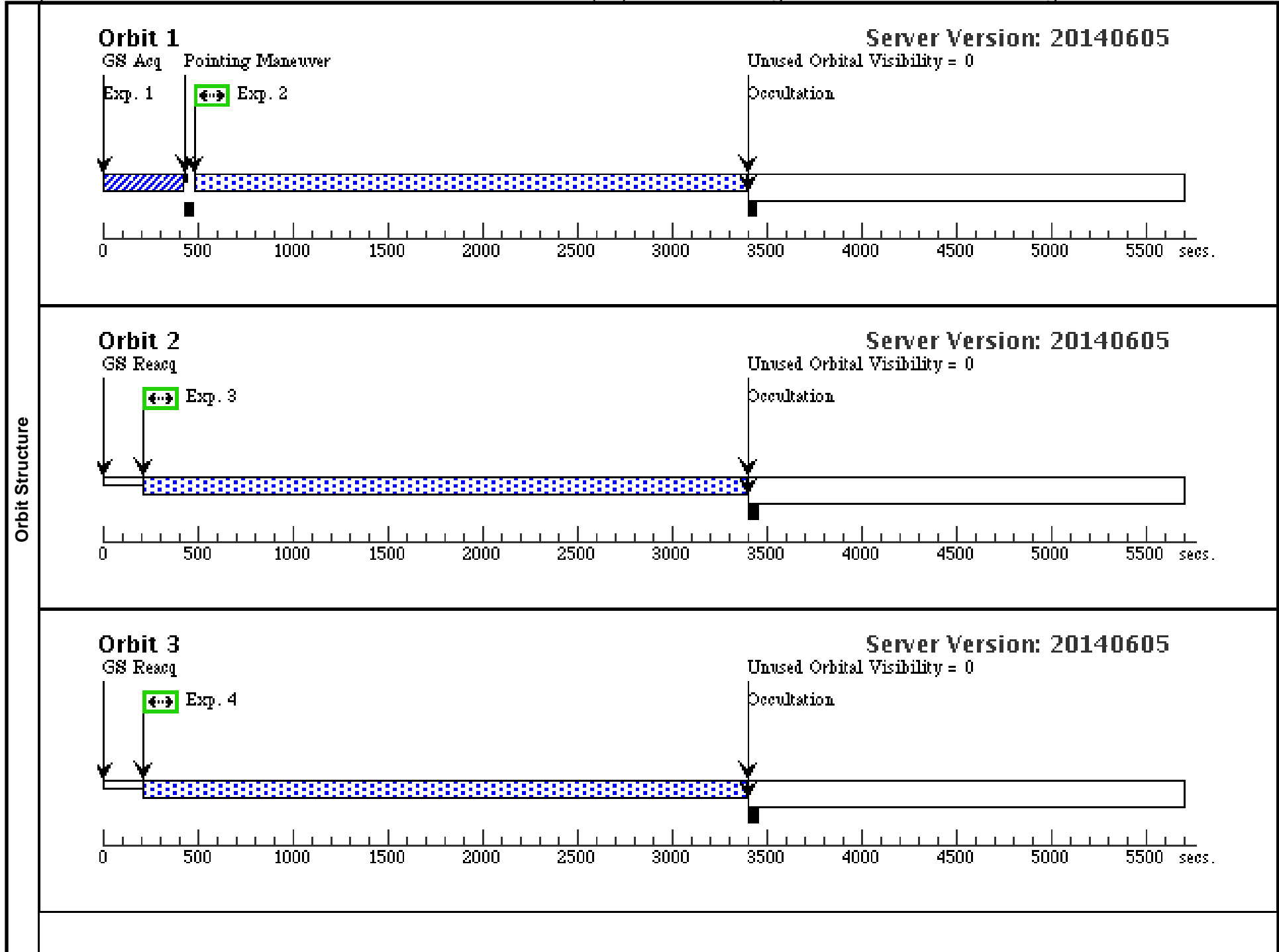


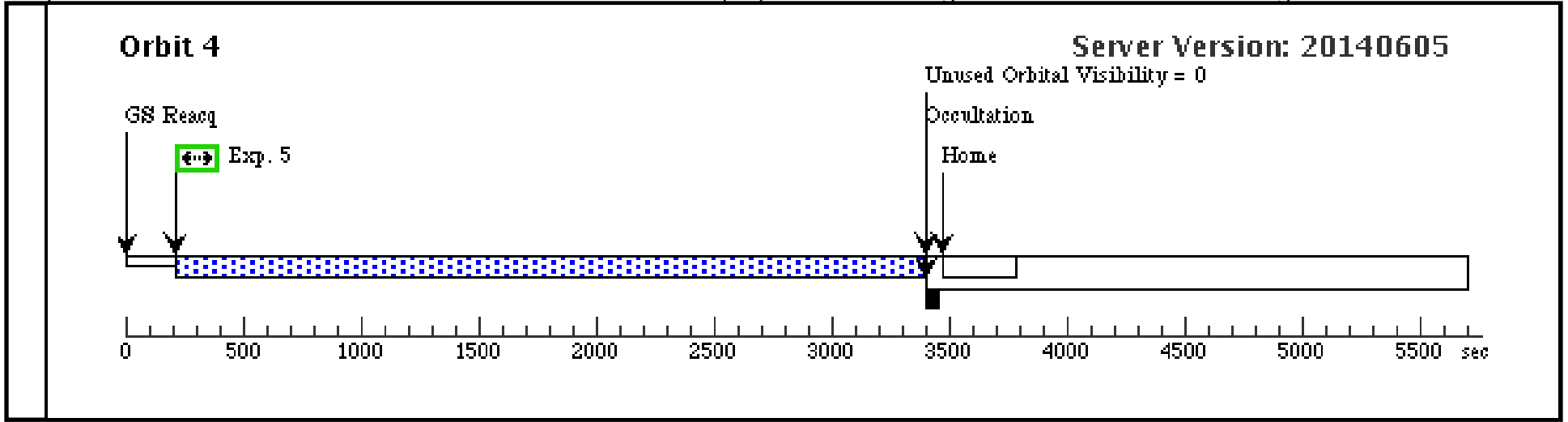


Proposal 13833 - Visit 2 - J0952+5151 - G160M - 1577A - 1/2 (02) - Characterizing the cool and warm-hot intergalactic medium in clus...

Wed Jul 23 01:19:29 GMT 2014

Visit	<b>Proposal 13833, Visit 2 - J0952+5151 - G160M - 1577A - 1/2 (02), implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: COS/NUV, COS/FUV Special Requirements: (none) Comments: This visit corresponds to the visit 1/2 of the J0952+5151 using G160M: - 4 orbits in total - 1 central wavelengths (1577A) - 4 FP-POS in total in each central wavelength (1 per orbit).									
	Fixed Targets									
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous					
(1)	VV2006-J095243.0+515121	RA: 09 52 43.0476 (148.1793650d) Dec: +51 51 21.15 (51.85588d) Equinox: J2000		V=17.97 FUV=18.71	Reference Frame: ICRS					
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.										
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	ACQ (COS.ta.618 969)	(1) VV2006-J095243 .0+515121	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				10 Secs (10 Secs) [==>]	[1]
	2	G160M - 1577 - FP1 - o1 (COS.sp.618 966)	(1) VV2006-J095243 .0+515121	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FP-POS=1; BUFFER-TIME=90 00			2696 Secs (2696 Secs) [==>]	[1]
	3	G160M - 1577 - FP2 - o2 (COS.sp.618 967)	(1) VV2006-J095243 .0+515121	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FP-POS=2; BUFFER-TIME=90 00			3123 Secs (3123 Secs) [==>]	[2]
	4	G160M - 1577 - FP3 - o3 (COS.sp.618 967)	(1) VV2006-J095243 .0+515121	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FP-POS=3; BUFFER-TIME=90 00			3123 Secs (3123 Secs) [==>]	[3]
	5	G160M - 1577 - FP4 - o4 (COS.sp.618 967)	(1) VV2006-J095243 .0+515121	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FP-POS=4; BUFFER-TIME=90 00			3123 Secs (3123 Secs) [==>]	[4]

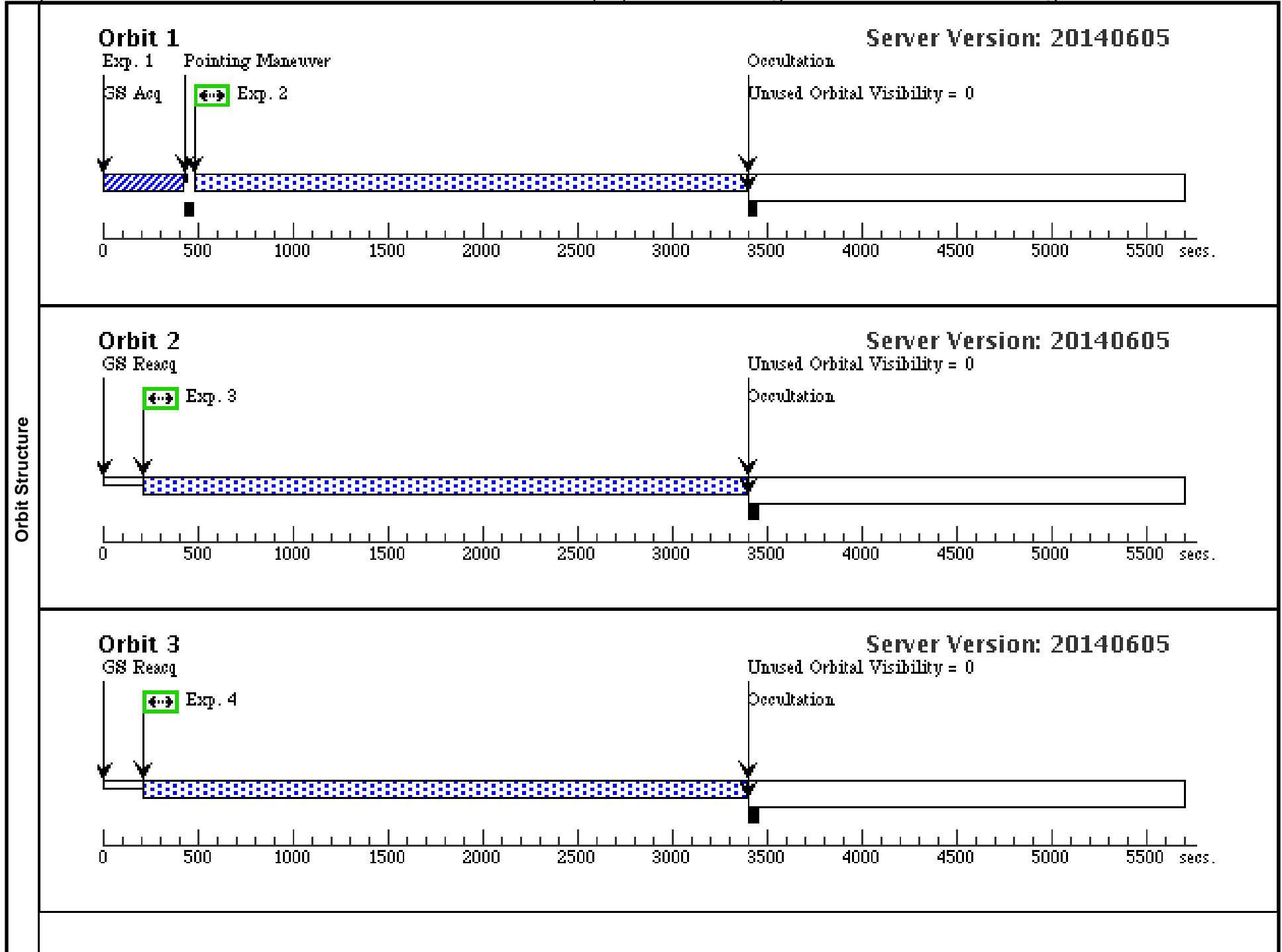


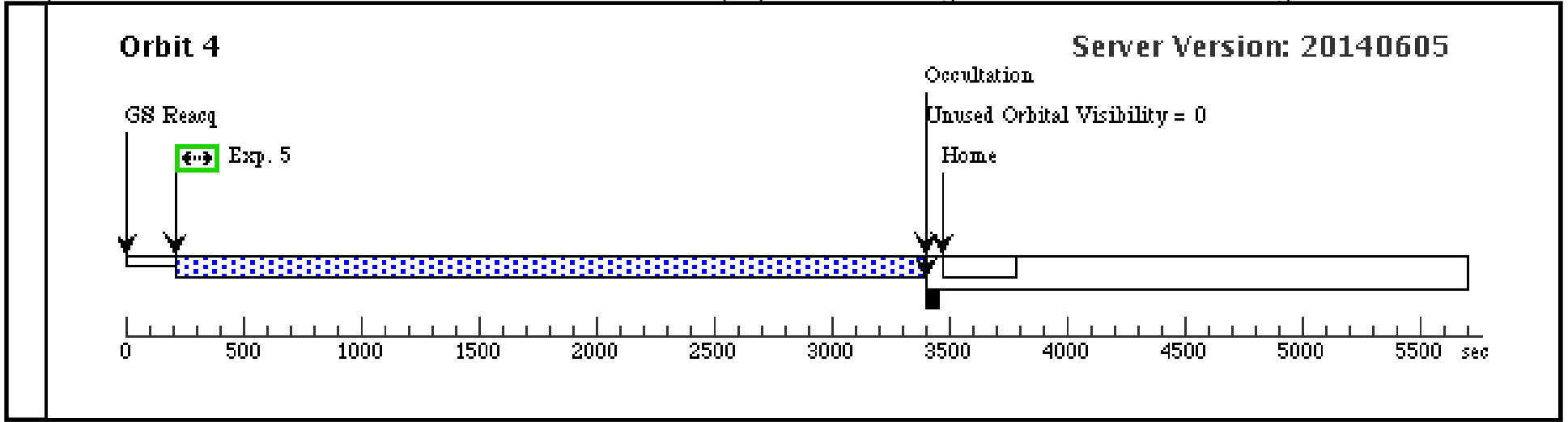


Proposal 13833 - Visit 3 - J0952+5151 - G160M - 1600A - 2/2 (03) - Characterizing the cool and warm-hot intergalactic medium in clus...

Wed Jul 23 01:19:29 GMT 2014

Visit	<b>Proposal 13833, Visit 3 - J0952+5151 - G160M - 1600A - 2/2 (03), implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: COS/NUV, COS/FUV Special Requirements: (none) Comments: This visit corresponds to the visit 2/2 of the J0952+5151 using G160M: - 4 orbits in total - 1 central wavelengths (1600A) - 4 FP-POS in total in each central wavelength (1 per orbit).																																																												
	Fixed Targets	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td>VV2006-J095243.0+515121</td> <td>RA: 09 52 43.0476 (148.1793650d) Dec: +51 51 21.15 (51.85588d) Equinox: J2000</td> <td></td> <td>V=17.97 FUV=18.71</td> <td>Reference Frame: ICRS</td> </tr> <tr> <td colspan="6">Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</td> </tr> </tbody> </table>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(1)	VV2006-J095243.0+515121	RA: 09 52 43.0476 (148.1793650d) Dec: +51 51 21.15 (51.85588d) Equinox: J2000		V=17.97 FUV=18.71	Reference Frame: ICRS	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.																																														
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Exposures	<table border="1"> <thead> <tr> <th>#</th> <th>Label (ETC Run)</th> <th>Target</th> <th>Config,Mode,Aperture</th> <th>Spectral Els.</th> <th>Opt. Params.</th> <th>Special Reqs.</th> <th>Groups</th> <th>Exp. Time (Total)/[Actual Dur.]</th> <th>Orbit</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>ACQ (COS.ta.618 969)</td> <td>(1) VV2006-J095243 .0+515121</td> <td>COS/NUV, ACQ/IMAGE, PSA</td> <td>MIRRORA</td> <td></td> <td></td> <td></td> <td>10 Secs (10 Secs) [==&gt;]</td> <td>[1]</td> </tr> <tr> <td>2</td> <td>G160M - 1600 - FP1 - o1 (COS.sp.618 970)</td> <td>(1) VV2006-J095243 .0+515121</td> <td>COS/FUV, TIME-TAG, PSA</td> <td>G160M 1600 A</td> <td>FP-POS=1; BUFFER-TIME=90 00</td> <td></td> <td></td> <td>2696 Secs (2696 Secs) [==&gt;]</td> <td>[1]</td> </tr> <tr> <td>3</td> <td>G160M - 1600 - FP2 - o2 (COS.sp.618 972)</td> <td>(1) VV2006-J095243 .0+515121</td> <td>COS/FUV, TIME-TAG, PSA</td> <td>G160M 1600 A</td> <td>FP-POS=2; BUFFER-TIME=90 00</td> <td></td> <td></td> <td>3123 Secs (3123 Secs) [==&gt;]</td> <td>[2]</td> </tr> <tr> <td>4</td> <td>G160M - 1600 - FP3 - o3 (COS.sp.618 972)</td> <td>(1) VV2006-J095243 .0+515121</td> <td>COS/FUV, TIME-TAG, PSA</td> <td>G160M 1600 A</td> <td>FP-POS=3; BUFFER-TIME=90 00</td> <td></td> <td></td> <td>3123 Secs (3123 Secs) [==&gt;]</td> <td>[3]</td> </tr> <tr> <td>5</td> <td>G160M - 1600 - FP4 - o4 (COS.sp.618 972)</td> <td>(1) VV2006-J095243 .0+515121</td> <td>COS/FUV, TIME-TAG, PSA</td> <td>G160M 1600 A</td> <td>FP-POS=4; BUFFER-TIME=90 00</td> <td></td> <td></td> <td>3123 Secs (3123 Secs) [==&gt;]</td> <td>[4]</td> </tr> </tbody> </table>	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	1	ACQ (COS.ta.618 969)	(1) VV2006-J095243 .0+515121	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				10 Secs (10 Secs) [==>]	[1]	2	G160M - 1600 - FP1 - o1 (COS.sp.618 970)	(1) VV2006-J095243 .0+515121	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=1; BUFFER-TIME=90 00			2696 Secs (2696 Secs) [==>]	[1]	3	G160M - 1600 - FP2 - o2 (COS.sp.618 972)	(1) VV2006-J095243 .0+515121	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=2; BUFFER-TIME=90 00			3123 Secs (3123 Secs) [==>]	[2]	4	G160M - 1600 - FP3 - o3 (COS.sp.618 972)	(1) VV2006-J095243 .0+515121	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=3; BUFFER-TIME=90 00			3123 Secs (3123 Secs) [==>]	[3]	5	G160M - 1600 - FP4 - o4 (COS.sp.618 972)	(1) VV2006-J095243 .0+515121	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=4; BUFFER-TIME=90 00			3123 Secs (3123 Secs) [==>]	[4]
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	2	G160M - 1600 - FP1 - o1 (COS.sp.618 970)	(1) VV2006-J095243 .0+515121	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=1; BUFFER-TIME=90 00			2696 Secs (2696 Secs) [==>]	[1]																																																			
	3	G160M - 1600 - FP2 - o2 (COS.sp.618 972)	(1) VV2006-J095243 .0+515121	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=2; BUFFER-TIME=90 00			3123 Secs (3123 Secs) [==>]	[2]																																																			
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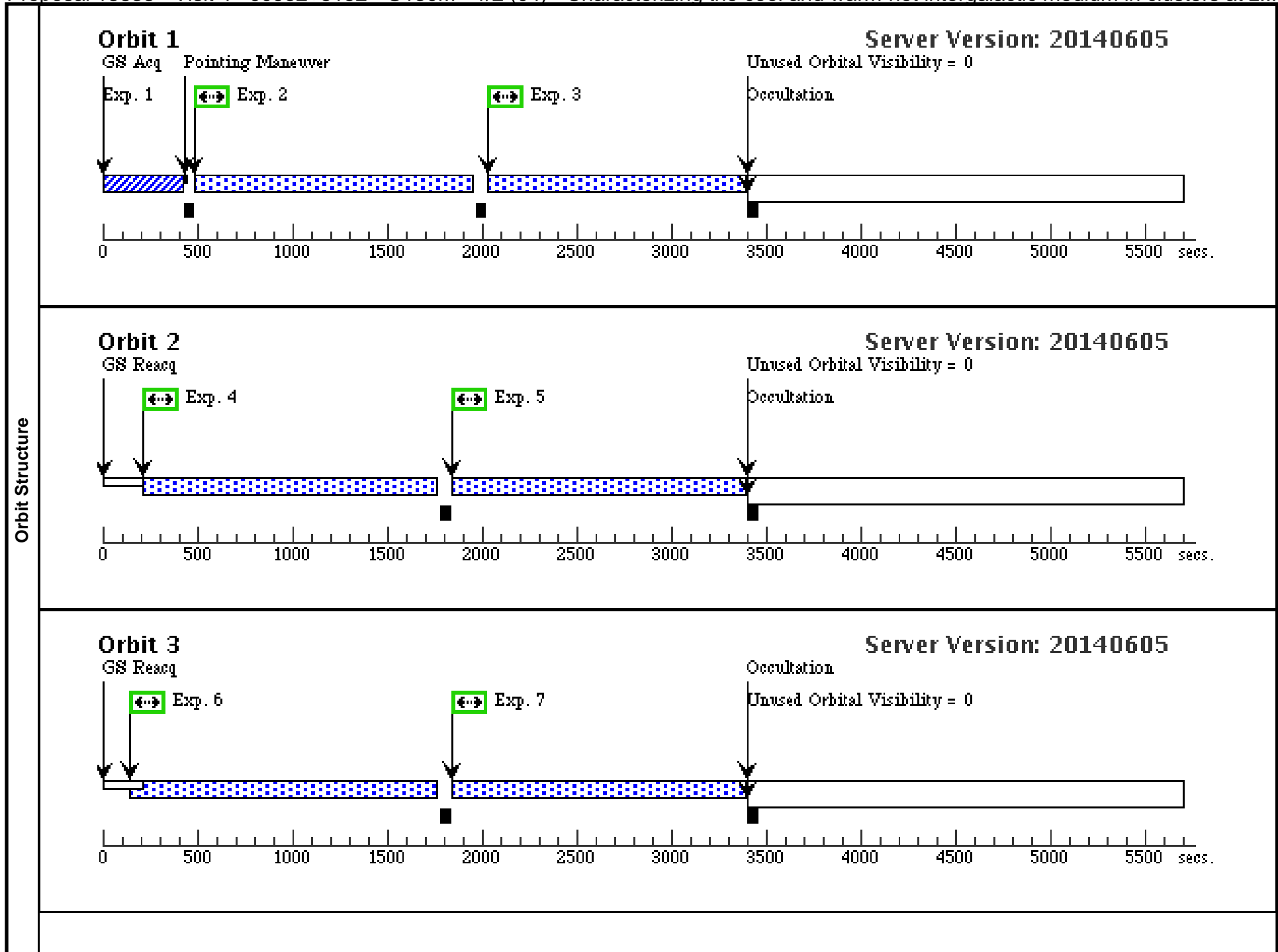


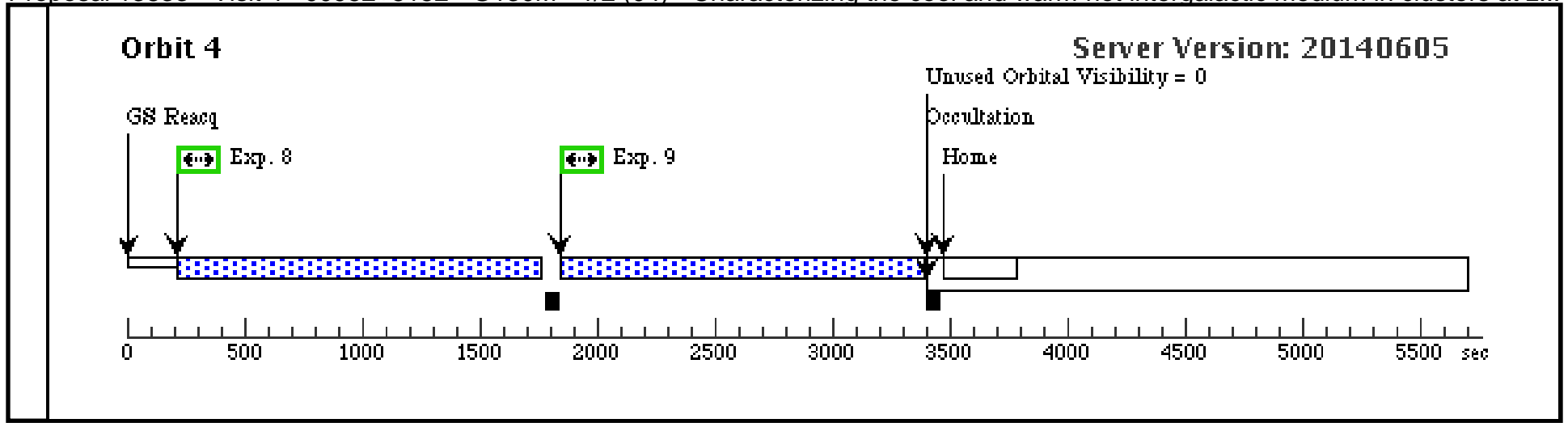


<b>Visit</b>	<p><b>Proposal 13833, Visit 4 - J0952+5152 - G130M - 1/2 (04), implementation</b> <span style="float: right;">Wed Jul 23 01:19:29 GMT 2014</span></p> <p><b>Diagnostic Status: No Diagnostics</b></p> <p>Scientific Instruments: COS/NUV, COS/FUV</p> <p>Special Requirements: (none)</p> <p><i>Comments: This visit corresponds to the visit 1/2 of the J0952+5152 using G130M:</i></p> <ul style="list-style-type: none"> <li>- 4 orbits in total</li> <li>- 2 central wavelengths (1309 and 1291A)</li> <li>- 4 FP-POS in total in each central wavelength (2 FP-POS per orbit)</li> </ul>					
	<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>
(2)		VV2006- J095240.2+515250	RA: 09 52 40.1693 (148.1673721d) Dec: +51 52 50.03 (51.88056d) Equinox: J2000		V=18.54 FUV=18.99	Reference Frame: ICRS
<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p>						

Proposal 13833 - Visit 4 - J0952+5152 - G130M - 1/2 (04) - Characterizing the cool and warm-hot intergalactic medium in clusters at z...

Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
	1	ACQ (COS.ta.622 283)	(2) VV2006-J095240 .2+515250	COS/NUV, ACQ/IMAGE, PSA	MIRRORA					10 Secs (10 Secs) [==>]	[1]
	2	G130M - 1309 - FP1 - o1 (COS.sp.618 997)	(2) VV2006-J095240 .2+515250	COS/FUV, TIME-TAG, PSA	G130M 1309 A	FP-POS=1; BUFFER-TIME=39 00			1300 Secs (1300 Secs) [==>]	[1]	
	3	G130M - 1309 - FP2 - o1 (COS.sp.618 997)	(2) VV2006-J095240 .2+515250	COS/FUV, TIME-TAG, PSA	G130M 1309 A	FP-POS=2; BUFFER-TIME=39 00			1311 Secs (1311 Secs) [==>]	[1]	
	4	G130M - 1309 - FP3 - o2 (COS.sp.618 999)	(2) VV2006-J095240 .2+515250	COS/FUV, TIME-TAG, PSA	G130M 1309 A	FP-POS=3; BUFFER-TIME=39 00			1495 Secs (1495 Secs) [==>]	[2]	
	5	G130M - 1309 - FP4 - o2 (COS.sp.618 999)	(2) VV2006-J095240 .2+515250	COS/FUV, TIME-TAG, PSA	G130M 1309 A	FP-POS=4; BUFFER-TIME=39 00			1494 Secs (1494 Secs) [==>]	[2]	
	6	G130M - 1291 - FP1 - o3 (COS.sp.619 000)	(2) VV2006-J095240 .2+515250	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=1; BUFFER-TIME=39 00			1494 Secs (1494 Secs) [==>]	[3]	
	7	G130M - 1291 - FP2 - o3 (COS.sp.619 000)	(2) VV2006-J095240 .2+515250	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=2; BUFFER-TIME=39 00			1495 Secs (1495 Secs) [==>]	[3]	
	8	G130M - 1291 - FP3 - o4 (COS.sp.619 000)	(2) VV2006-J095240 .2+515250	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=39 00			1495 Secs (1495 Secs) [==>]	[4]	
	9	G130M - 1291 - FP4 - o4 (COS.sp.619 000)	(2) VV2006-J095240 .2+515250	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=4; BUFFER-TIME=39 00			1494 Secs (1494 Secs) [==>]	[4]	



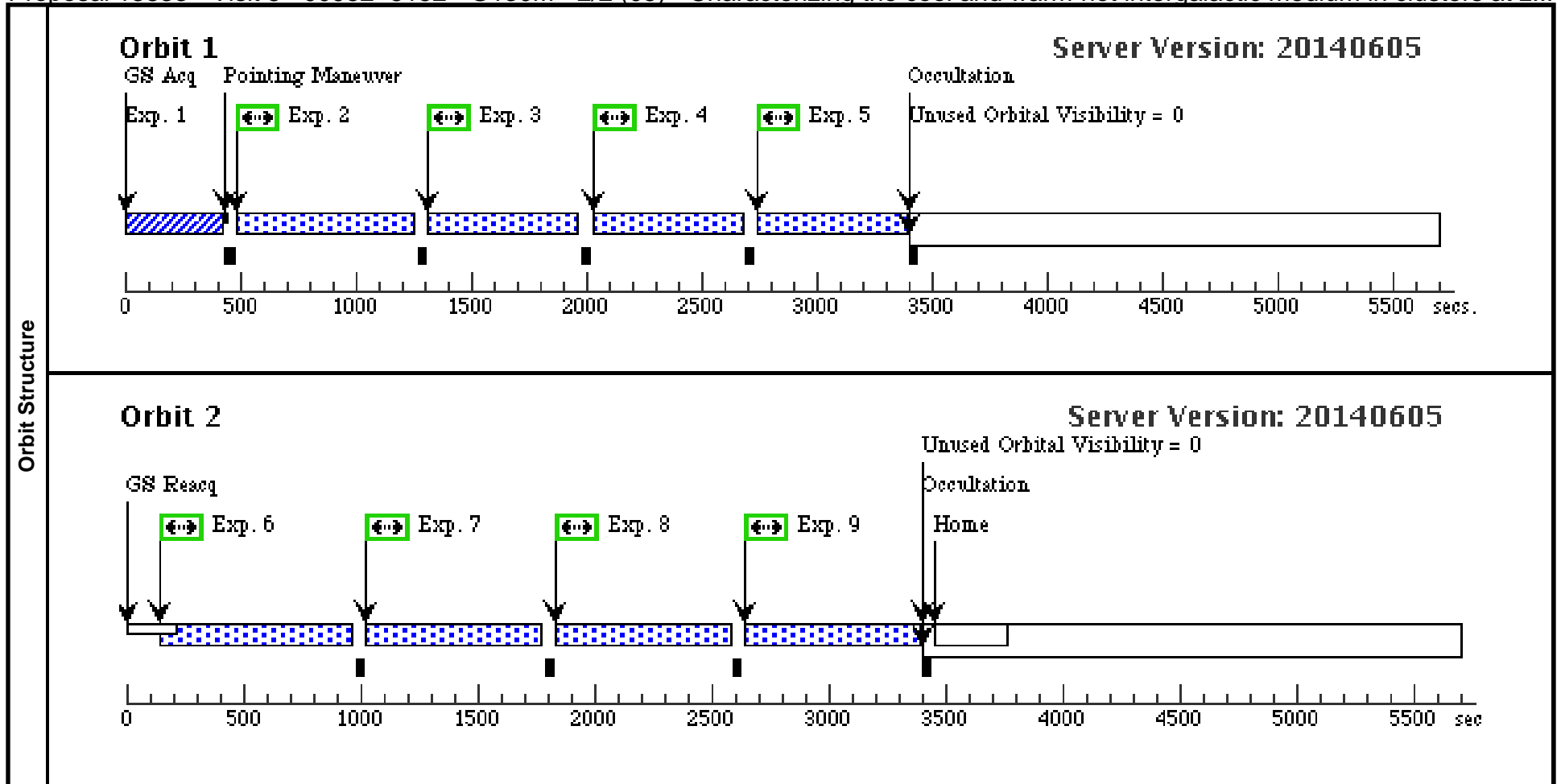


Proposal 13833 - Visit 5 - J0952+5152 - G130M - 2/2 (05) - Characterizing the cool and warm-hot intergalactic medium in clusters at z...

<b>Visit</b>	<p><b>Proposal 13833, Visit 5 - J0952+5152 - G130M - 2/2 (05), implementation</b> <span style="float: right;">Wed Jul 23 01:19:30 GMT 2014</span></p> <p><b>Diagnostic Status: No Diagnostics</b></p> <p>Scientific Instruments: COS/NUV, COS/FUV</p> <p>Special Requirements: (none)</p> <p><i>Comments: This visit corresponds to the visit 2/2 of the J0952+5152 using G130M:</i></p> <ul style="list-style-type: none"> <li>- 2 orbits in total</li> <li>- 2 central wavelengths (1309 and 1291A)</li> <li>- 4 FP-POS in total in each central wavelength (4 FP-POS per orbit)</li> </ul>					
	<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>
(2)		VV2006- J095240.2+515250	RA: 09 52 40.1693 (148.1673721d) Dec: +51 52 50.03 (51.88056d) Equinox: J2000		V=18.54 FUV=18.99	Reference Frame: ICRS
<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p>						

Proposal 13833 - Visit 5 - J0952+5152 - G130M - 2/2 (05) - Characterizing the cool and warm-hot intergalactic medium in clusters at z...

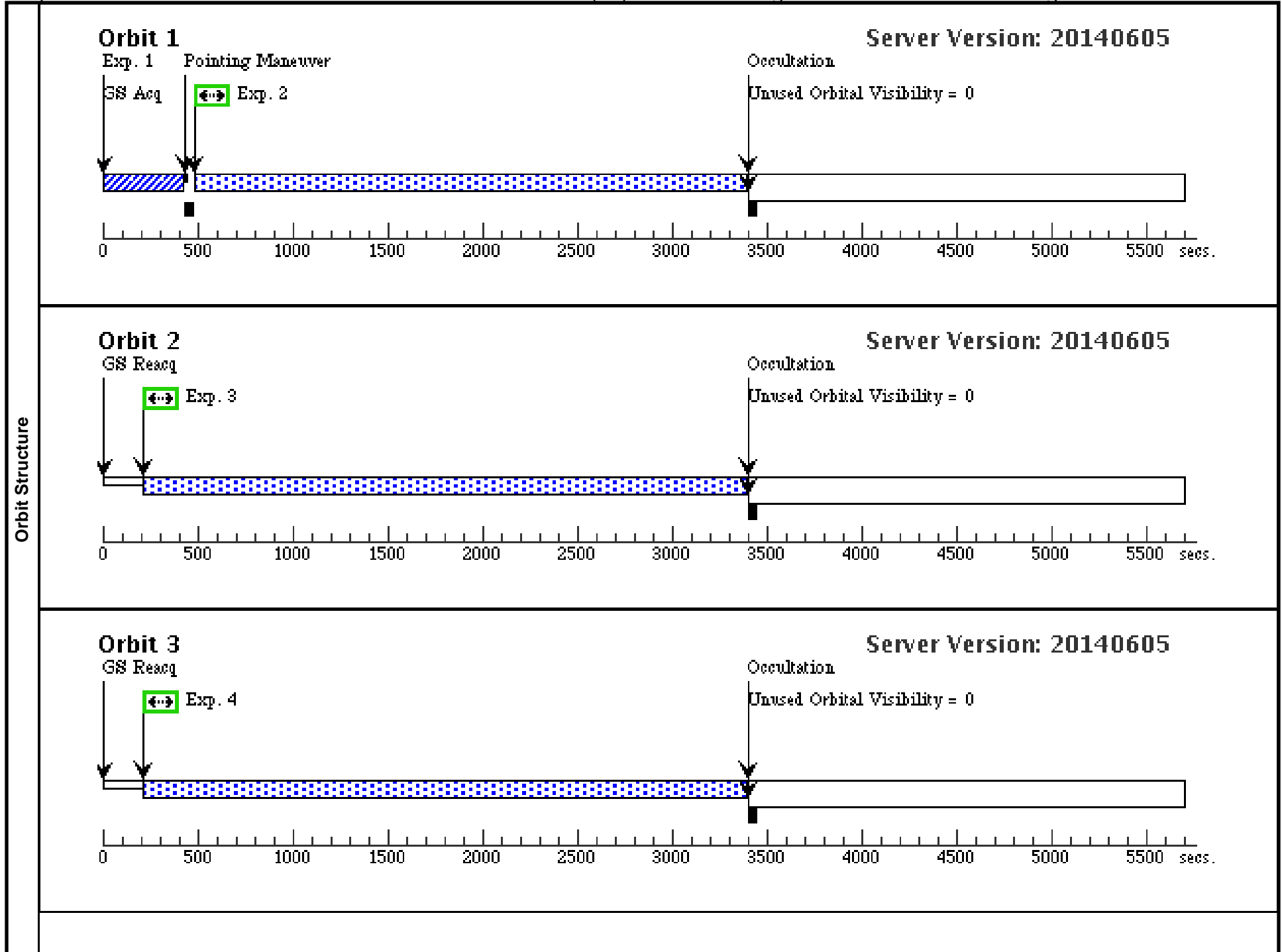
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
	1	ACQ (COS.ta.622 283)	(2) VV2006-J095240 .2+515250	COS/NUV, ACQ/IMAGE, PSA	MIRRORA					10 Secs (10 Secs) [==>]	[1]
	2	G130M - 1309 - FP1 - o1 (COS.sp.619 001)	(2) VV2006-J095240 .2+515250	COS/FUV, TIME-TAG, PSA	G130M 1309 A	FP-POS=1; BUFFER-TIME=39 00				597 Secs (597 Secs) [==>]	[1]
	3	G130M - 1309 - FP2 - o1 (COS.sp.619 001)	(2) VV2006-J095240 .2+515250	COS/FUV, TIME-TAG, PSA	G130M 1309 A	FP-POS=2; BUFFER-TIME=39 00				598 Secs (598 Secs) [==>]	[1]
	4	G130M - 1309 - FP3 - o1 (COS.sp.619 001)	(2) VV2006-J095240 .2+515250	COS/FUV, TIME-TAG, PSA	G130M 1309 A	FP-POS=3; BUFFER-TIME=39 00				597 Secs (597 Secs) [==>]	[1]
	5	G130M - 1309 - FP4 - o1 (COS.sp.619 001)	(2) VV2006-J095240 .2+515250	COS/FUV, TIME-TAG, PSA	G130M 1309 A	FP-POS=4; BUFFER-TIME=39 00				598 Secs (598 Secs) [==>]	[1]
	6	G130M - 1291 - FP1 - o2 (COS.sp.619 004)	(2) VV2006-J095240 .2+515250	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=1; BUFFER-TIME=39 00				694 Secs (694 Secs) [==>]	[2]
	7	G130M - 1291 - FP2 - o2 (COS.sp.619 004)	(2) VV2006-J095240 .2+515250	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=2; BUFFER-TIME=39 00				695 Secs (695 Secs) [==>]	[2]
	8	G130M - 1291 - FP3 - o2 (COS.sp.619 004)	(2) VV2006-J095240 .2+515250	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=39 00				694 Secs (694 Secs) [==>]	[2]
	9	G130M - 1291 - FP4 - o2 (COS.sp.619 004)	(2) VV2006-J095240 .2+515250	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=4; BUFFER-TIME=39 00				695 Secs (695 Secs) [==>]	[2]

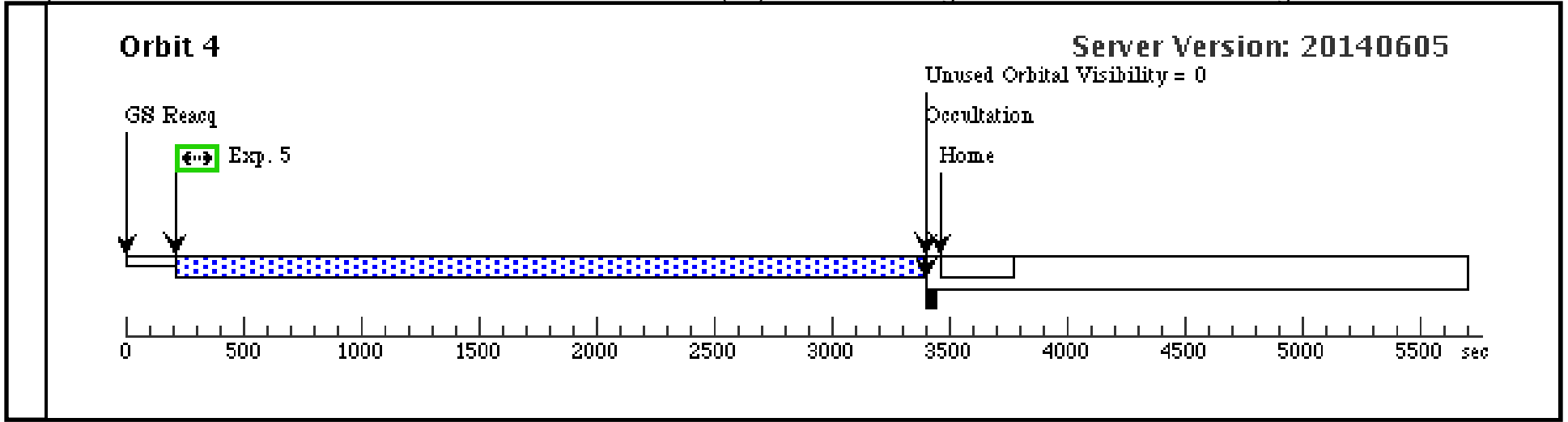


Proposal 13833 - Visit 6 - J0952+5152 - G160M - 1577A - 1/2 (06) - Characterizing the cool and warm-hot intergalactic medium in clus...

Wed Jul 23 01:19:30 GMT 2014

Visit	<b>Proposal 13833, Visit 6 - J0952+5152 - G160M - 1577A - 1/2 (06), implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: COS/NUV, COS/FUV Special Requirements: (none) Comments: This visit corresponds to the visit 1/2 of the J0952+5152 using G160M: - 4 orbits in total - 1 central wavelengths (1577A) - 4 FP-POS in total in each central wavelength (1 per orbit).									
	Fixed Targets									
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous					
(2)	VV2006-J095240.2+515250	RA: 09 52 40.1693 (148.1673721d) Dec: +51 52 50.03 (51.88056d) Equinox: J2000		V=18.54 FUV=18.99	Reference Frame: ICRS					
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.										
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	ACQ (COS.ta.622 283)	(2) VV2006-J095240 .2+515250	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				10 Secs (10 Secs) [==>]	[1]
	2	G160M - 1577 - FP1 - o1 (COS.sp.619 053)	(2) VV2006-J095240 .2+515250	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FP-POS=1; BUFFER-TIME=90 00			2696 Secs (2696 Secs) [==>]	[1]
	3	G160M - 1577 - FP2 - o2 (COS.sp.618 967)	(2) VV2006-J095240 .2+515250	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FP-POS=2; BUFFER-TIME=96 00			3123 Secs (3123 Secs) [==>]	[2]
	4	G160M - 1577 - FP3 - o3 (COS.sp.618 967)	(2) VV2006-J095240 .2+515250	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FP-POS=3; BUFFER-TIME=96 00			3123 Secs (3123 Secs) [==>]	[3]
	5	G160M - 1577 - FP4 - o4 (COS.sp.618 967)	(2) VV2006-J095240 .2+515250	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FP-POS=4; BUFFER-TIME=96 00			3123 Secs (3123 Secs) [==>]	[4]

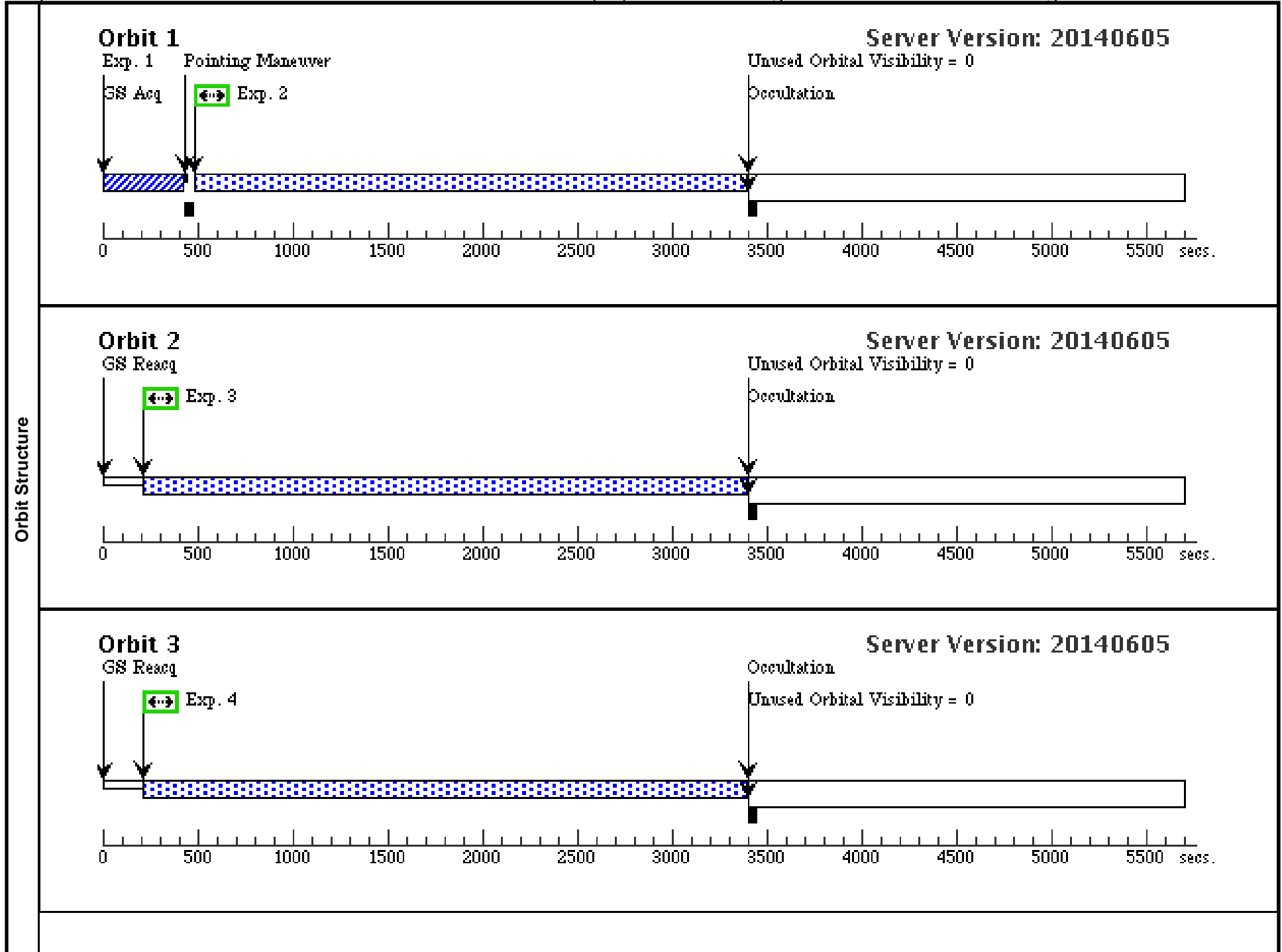


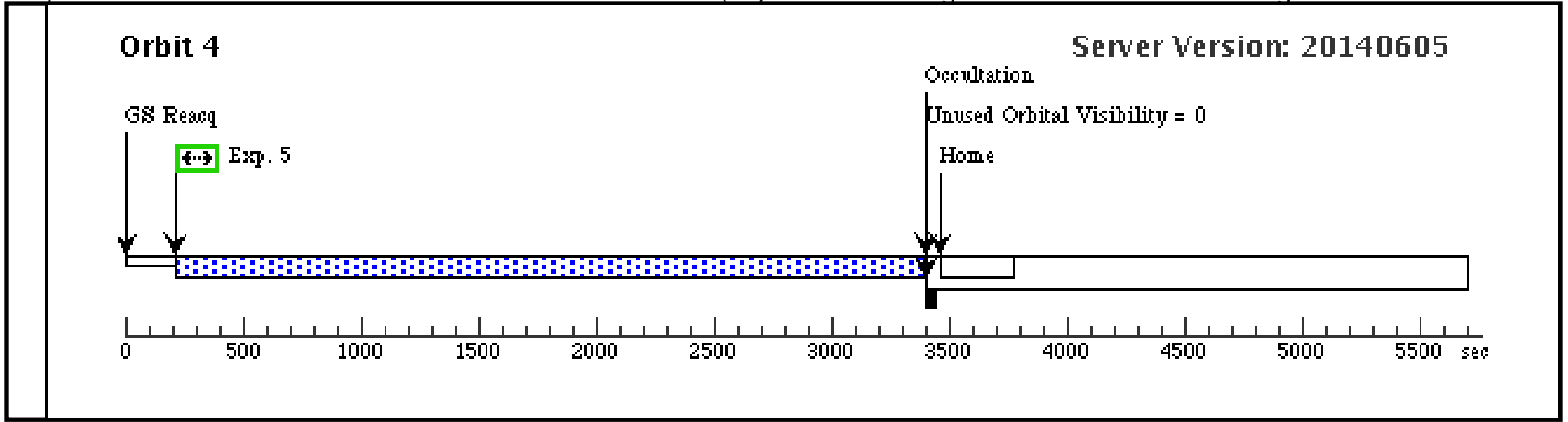


Proposal 13833 - Visit 7 - J0952+5152 - G160M - 1600A - 2/2 (07) - Characterizing the cool and warm-hot intergalactic medium in clus...

Wed Jul 23 01:19:30 GMT 2014

Visit	<b>Proposal 13833, Visit 7 - J0952+5152 - G160M - 1600A - 2/2 (07), implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: COS/NUV, COS/FUV Special Requirements: (none) Comments: This visit corresponds to the visit 2/2 of the J0952+5152 using G160M: - 4 orbits in total - 1 central wavelengths (1600A) - 4 FP-POS in total in each central wavelength (1 per orbit).																										
	Fixed Targets	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(2)</td> <td>VV2006-J095240.2+515250</td> <td>RA: 09 52 40.1693 (148.1673721d) Dec: +51 52 50.03 (51.88056d) Equinox: J2000</td> <td></td> <td>V=18.54 FUV=18.99</td> <td>Reference Frame: ICRS</td> </tr> <tr> <td colspan="6">Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</td> </tr> </tbody> </table>									#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(2)	VV2006-J095240.2+515250	RA: 09 52 40.1693 (148.1673721d) Dec: +51 52 50.03 (51.88056d) Equinox: J2000		V=18.54 FUV=18.99	Reference Frame: ICRS	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.				
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous																						
(2)	VV2006-J095240.2+515250	RA: 09 52 40.1693 (148.1673721d) Dec: +51 52 50.03 (51.88056d) Equinox: J2000		V=18.54 FUV=18.99	Reference Frame: ICRS																						
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.																											
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit																	
	1	ACQ (COS.ta.622 283)	(2) VV2006-J095240 .2+515250	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				10 Secs (10 Secs) [==>]	[1]																	
	2	G160M - 1600 - FP1 - o1 (COS.sp.619 054)	(2) VV2006-J095240 .2+515250	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=1; BUFFER-TIME=96 00			2696 Secs (2696 Secs) [==>]	[1]																	
	3	G160M - 1600 - FP2 - o2 (COS.sp.619 056)	(2) VV2006-J095240 .2+515250	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=2; BUFFER-TIME=96 00			3123 Secs (3123 Secs) [==>]	[2]																	
	4	G160M - 1600 - FP3 - o3 (COS.sp.619 056)	(2) VV2006-J095240 .2+515250	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=3; BUFFER-TIME=96 00			3123 Secs (3123 Secs) [==>]	[3]																	
	5	G160M - 1600 - FP4 - o4 (COS.sp.619 056)	(2) VV2006-J095240 .2+515250	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=4; BUFFER-TIME=96 00			3123 Secs (3123 Secs) [==>]	[4]																	

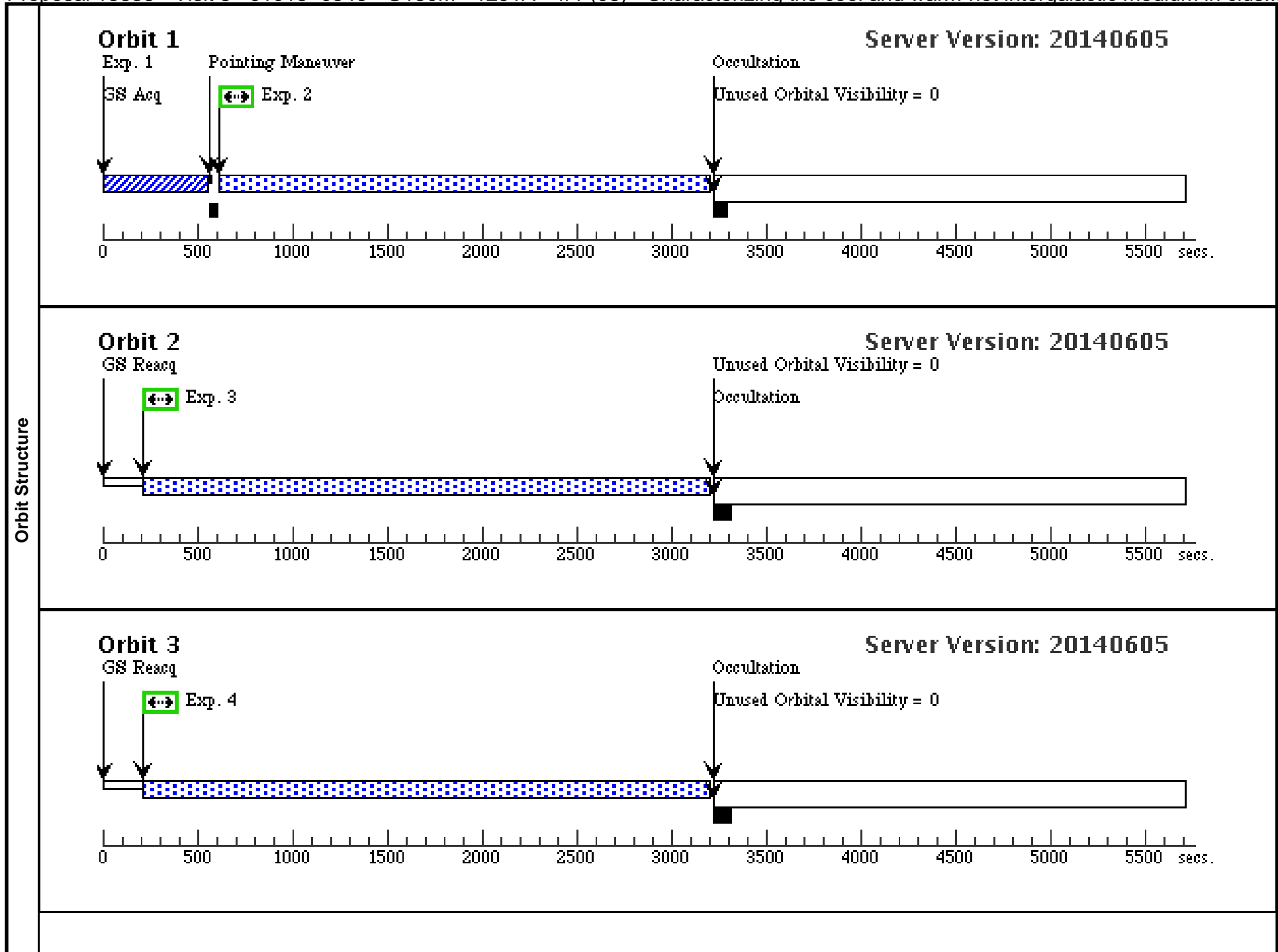


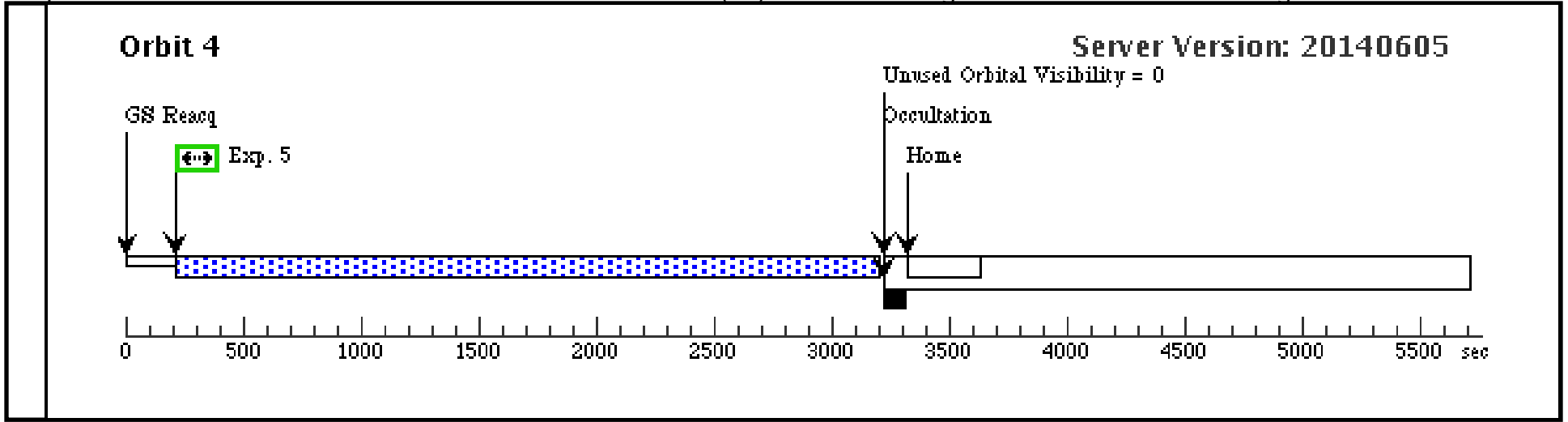


Proposal 13833 - Visit 8 - J1018+0546 - G130M - 1291A - 1/1 (08) - Characterizing the cool and warm-hot intergalactic medium in clus...

Wed Jul 23 01:19:30 GMT 2014

Visit	<b>Proposal 13833, Visit 8 - J1018+0546 - G130M - 1291A - 1/1 (08), implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: COS/NUV, COS/FUV Special Requirements: (none) Comments: This visit corresponds to the visit 1/1 of the J1018+0546 using G130M: - 4 orbits in total - 1 central wavelength (1291A only) - 4 FP-POS in total per central wavelength (1 FP-POS per orbit)																																																												
	Fixed Targets	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(3)</td> <td>VV2006-J101814.0+054625</td> <td>RA: 10 18 13.9895 (154.5582896d) Dec: +05 46 25.46 (5.77374d) Equinox: J2000</td> <td></td> <td>V=17.99 FUV=18.78</td> <td>Reference Frame: ICRS</td> </tr> <tr> <td colspan="6">Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</td> </tr> </tbody> </table>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(3)	VV2006-J101814.0+054625	RA: 10 18 13.9895 (154.5582896d) Dec: +05 46 25.46 (5.77374d) Equinox: J2000		V=17.99 FUV=18.78	Reference Frame: ICRS	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.																																														
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Exposures	<table border="1"> <thead> <tr> <th>#</th> <th>Label (ETC Run)</th> <th>Target</th> <th>Config,Mode,Aperture</th> <th>Spectral Els.</th> <th>Opt. Params.</th> <th>Special Reqs.</th> <th>Groups</th> <th>Exp. Time (Total)/[Actual Dur.]</th> <th>Orbit</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>ACQ (COS.ta.619 062)</td> <td>(3) VV2006-J101814 .0+054625</td> <td>COS/NUV, ACQ/IMAGE, PSA</td> <td>MIRRORA</td> <td></td> <td></td> <td></td> <td>75 Secs (75 Secs) [==&gt;]</td> <td>[1]</td> </tr> <tr> <td>2</td> <td>G130M - 1291 - FP1 - o1 (COS.sp.619 850)</td> <td>(3) VV2006-J101814 .0+054625</td> <td>COS/FUV, TIME-TAG, PSA</td> <td>G130M 1291 A</td> <td>FP-POS=1; BUFFER-TIME=37 00</td> <td></td> <td></td> <td>2425 Secs (2425 Secs) [==&gt;]</td> <td>[1]</td> </tr> <tr> <td>3</td> <td>G130M - 1291 - FP2 - o2 (COS.sp.619 068)</td> <td>(3) VV2006-J101814 .0+054625</td> <td>COS/FUV, TIME-TAG, PSA</td> <td>G130M 1291 A</td> <td>FP-POS=2; BUFFER-TIME=37 00</td> <td></td> <td></td> <td>2936 Secs (2936 Secs) [==&gt;]</td> <td>[2]</td> </tr> <tr> <td>4</td> <td>G130M - 1291 - FP3 - o3 (COS.sp.619 068)</td> <td>(3) VV2006-J101814 .0+054625</td> <td>COS/FUV, TIME-TAG, PSA</td> <td>G130M 1291 A</td> <td>FP-POS=3; BUFFER-TIME=37 00</td> <td></td> <td></td> <td>2936 Secs (2936 Secs) [==&gt;]</td> <td>[3]</td> </tr> <tr> <td>5</td> <td>G130M - 1291 - FP4 - o4 (COS.sp.619 068)</td> <td>(3) VV2006-J101814 .0+054625</td> <td>COS/FUV, TIME-TAG, PSA</td> <td>G130M 1291 A</td> <td>FP-POS=4; BUFFER-TIME=37 00</td> <td></td> <td></td> <td>2936 Secs (2936 Secs) [==&gt;]</td> <td>[4]</td> </tr> </tbody> </table>	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	1	ACQ (COS.ta.619 062)	(3) VV2006-J101814 .0+054625	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				75 Secs (75 Secs) [==>]	[1]	2	G130M - 1291 - FP1 - o1 (COS.sp.619 850)	(3) VV2006-J101814 .0+054625	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=1; BUFFER-TIME=37 00			2425 Secs (2425 Secs) [==>]	[1]	3	G130M - 1291 - FP2 - o2 (COS.sp.619 068)	(3) VV2006-J101814 .0+054625	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=2; BUFFER-TIME=37 00			2936 Secs (2936 Secs) [==>]	[2]	4	G130M - 1291 - FP3 - o3 (COS.sp.619 068)	(3) VV2006-J101814 .0+054625	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=37 00			2936 Secs (2936 Secs) [==>]	[3]	5	G130M - 1291 - FP4 - o4 (COS.sp.619 068)	(3) VV2006-J101814 .0+054625	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=4; BUFFER-TIME=37 00			2936 Secs (2936 Secs) [==>]	[4]
	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit																																																			
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	2	G130M - 1291 - FP1 - o1 (COS.sp.619 850)	(3) VV2006-J101814 .0+054625	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=1; BUFFER-TIME=37 00			2425 Secs (2425 Secs) [==>]	[1]																																																			
	3	G130M - 1291 - FP2 - o2 (COS.sp.619 068)	(3) VV2006-J101814 .0+054625	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=2; BUFFER-TIME=37 00			2936 Secs (2936 Secs) [==>]	[2]																																																			
	4	G130M - 1291 - FP3 - o3 (COS.sp.619 068)	(3) VV2006-J101814 .0+054625	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=37 00			2936 Secs (2936 Secs) [==>]	[3]																																																			
5	G130M - 1291 - FP4 - o4 (COS.sp.619 068)	(3) VV2006-J101814 .0+054625	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=4; BUFFER-TIME=37 00			2936 Secs (2936 Secs) [==>]	[4]																																																				

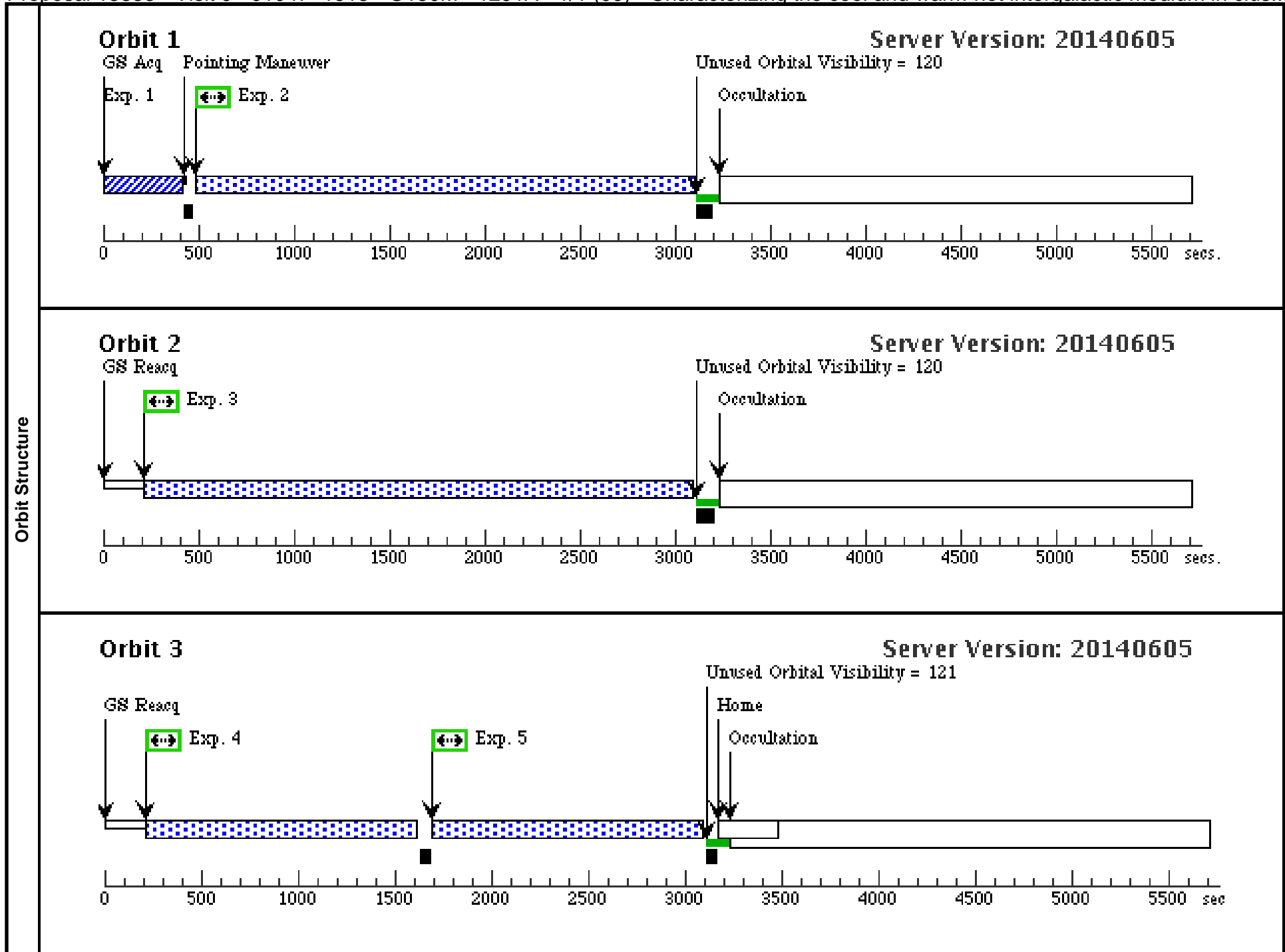




Proposal 13833 - Visit 9 - J1047+1513 - G130M - 1291A - 1/1 (09) - Characterizing the cool and warm-hot intergalactic medium in clus...

Wed Jul 23 01:19:30 GMT 2014

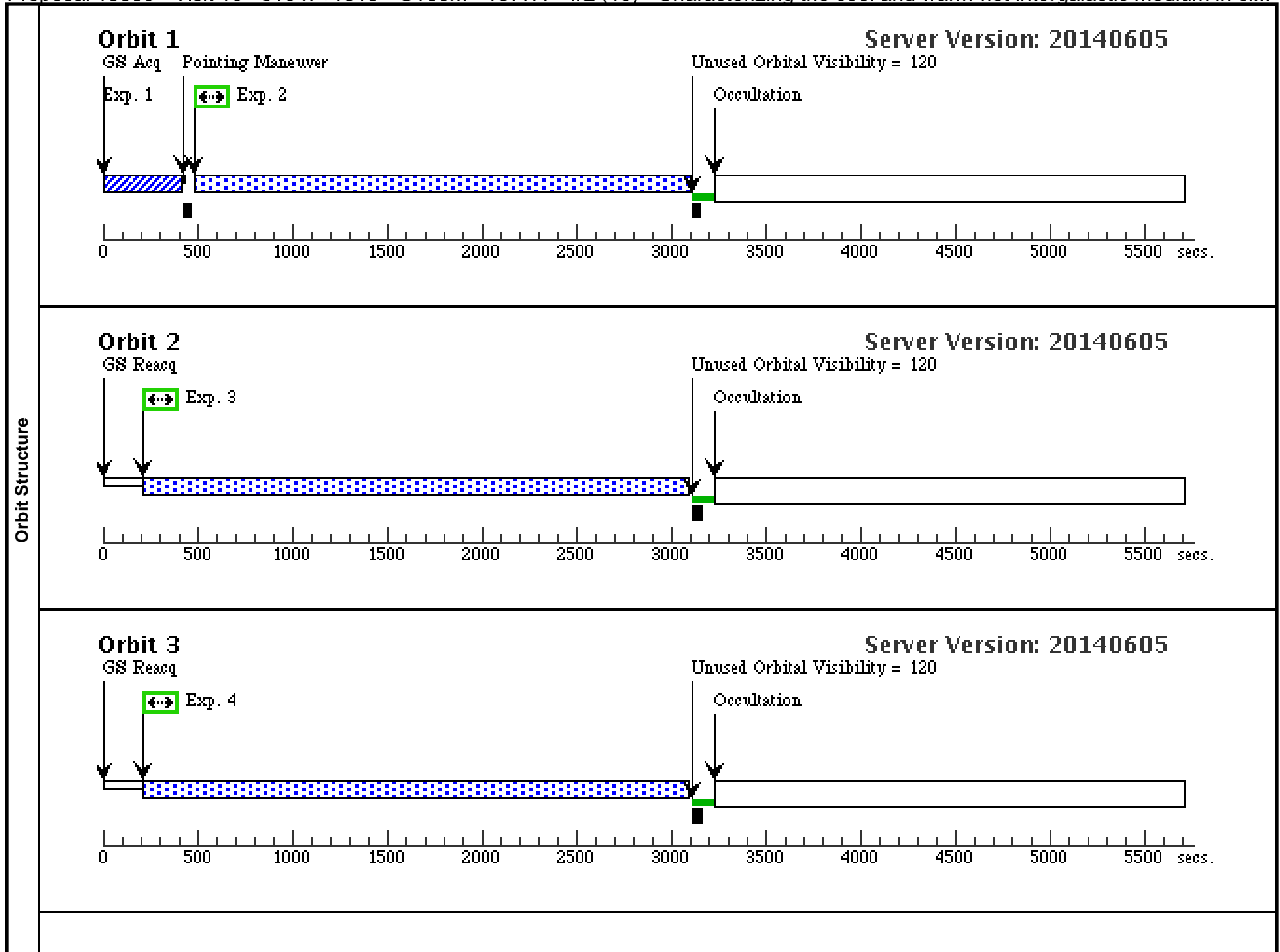
Visit	<b>Proposal 13833, Visit 9 - J1047+1513 - G130M - 1291A - 1/1 (09), implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: COS/NUV, COS/FUV Special Requirements: (none) Comments: This visit corresponds to the visit 1/1 of the J1047+1513 using G130M: - 3 orbits in total - 1 central wavelength (1291A only) - 4 FP-POS in total in each central wavelength (1 FP-POS first 2 orbits, 3rd orbit 2 FP-POS) - We imposed unused orbital visibility of 120s to ensure schedulability with 2 guiding stars																																																												
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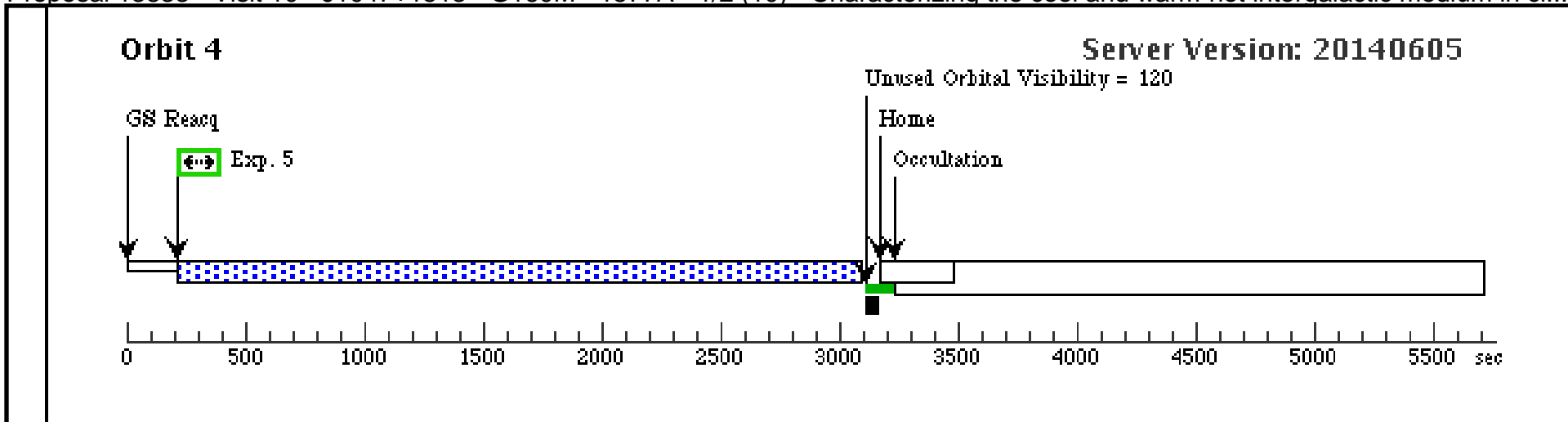


Proposal 13833 - Visit 10 - J1047+1513 - G160M - 1577A - 1/2 (10) - Characterizing the cool and warm-hot intergalactic medium in cl...

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Visit	<b>Proposal 13833, Visit 10 - J1047+1513 - G160M - 1577A - 1/2 (10), implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: COS/NUV, COS/FUV Special Requirements: (none) Comments: This visit corresponds to the visit 1/2 of the J1047+1513 using G160M: - 4 orbits in total - 1 central wavelength (1577A) - 4 FP-POS in total per central wavelength (1 per orbit) - We imposed unused orbital visibility of 120s to ensure schedulability with 2 guiding stars																																																												
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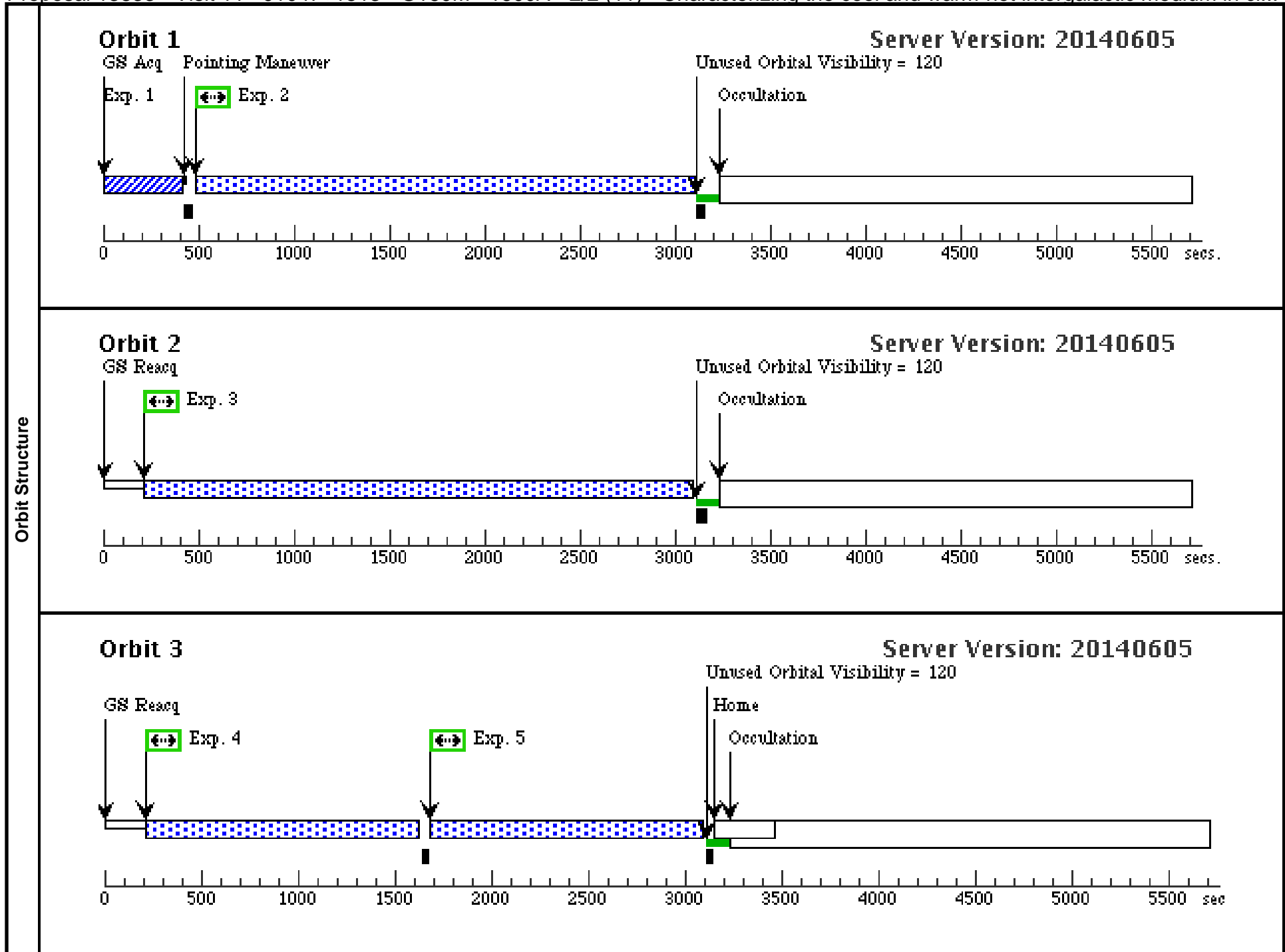




Proposal 13833 - Visit 11 - J1047+1513 - G160M - 1600A - 2/2 (11) - Characterizing the cool and warm-hot intergalactic medium in cl...

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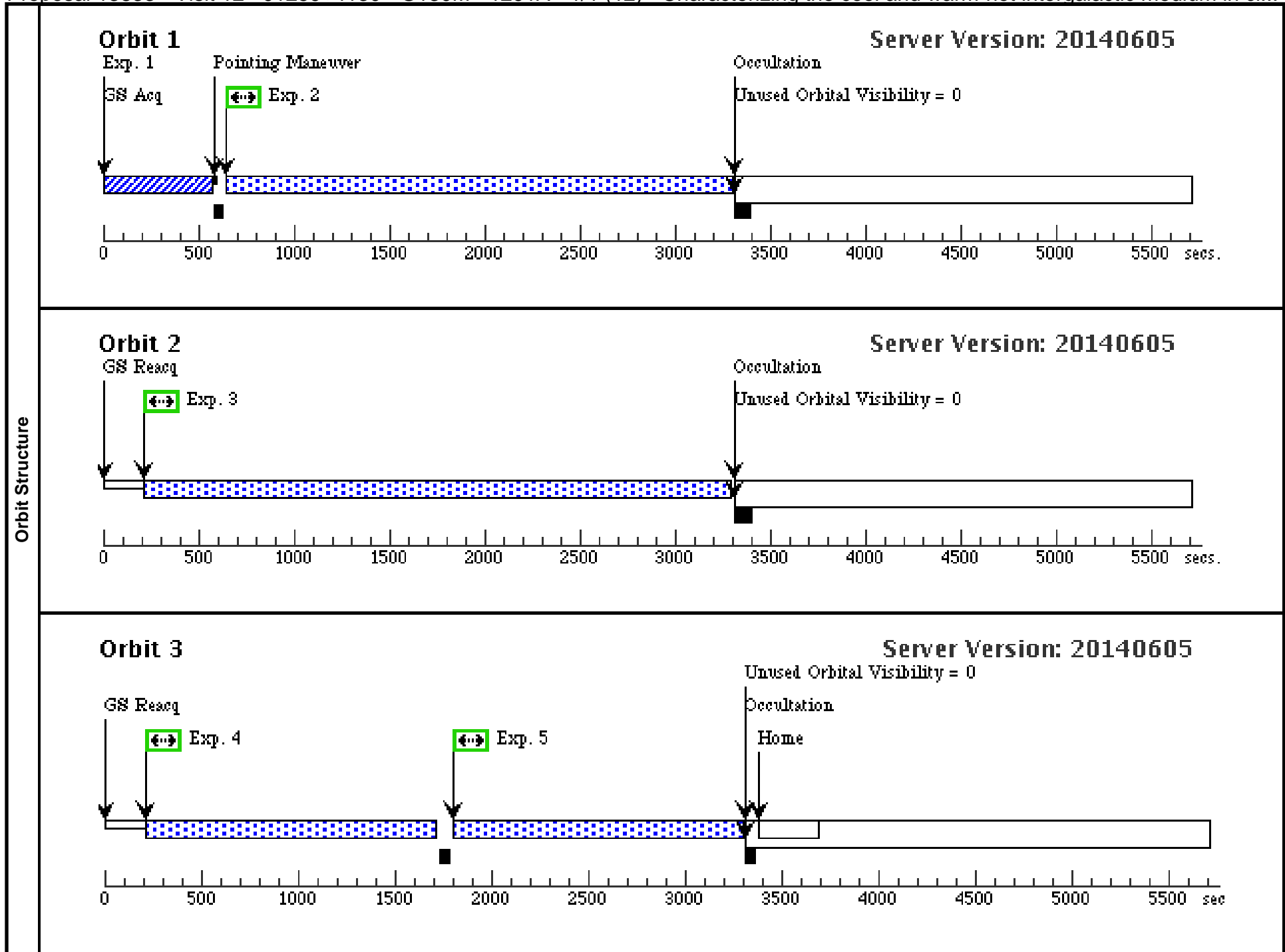
<b>Visit</b>	<b>Proposal 13833, Visit 11 - J1047+1513 - G160M - 1600A - 2/2 (11), implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: COS/NUV, COS/FUV Special Requirements: (none) Comments: This visit corresponds to the visit 2/2 of the J1047+1513 using G160M: - 3 orbits in total - 1 central wavelength (1600A) - 4 FP-POS in total per central wavelength (1 FP-POS first 2 orbits, 3rd orbit 2 FP-POS) - We imposed unused orbital visibility of 120s to ensure schedulability with 2 guiding stars									
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	2	G160M - 1600 - FP1 - o2 (COS.sp.622 251)	(4) SDSS-J104741.7 5+151332.2	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=1; BUFFER-TIME=81 00			2404 Secs (2404 Secs) [==>]	[1]
	3	G160M - 1600 - FP2 - o2 (COS.sp.622 252)	(4) SDSS-J104741.7 5+151332.2	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=2; BUFFER-TIME=81 00			2825 Secs (2825 Secs) [==>]	[2]
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Proposal 13833 - Visit 12 - J1259+4130 - G130M - 1291A - 1/1 (12) - Characterizing the cool and warm-hot intergalactic medium in cl...

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Visit	<b>Proposal 13833, Visit 12 - J1259+4130 - G130M - 1291A - 1/1 (12), implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: COS/NUV, COS/FUV Special Requirements: (none) Comments: This visit corresponds to the visit 1/1 of the J1259+4130 using G130M: - 3 orbits in total - 1 central wavelength (1291A only) - 4 FP-POS in total per central wavelength (1 FP-POS first 2 orbits, 3rd orbit 2 FP-POS)																																																												
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Exposures	<table border="1"> <thead> <tr> <th>#</th> <th>Label (ETC Run)</th> <th>Target</th> <th>Config,Mode,Aperture</th> <th>Spectral Els.</th> <th>Opt. Params.</th> <th>Special Reqs.</th> <th>Groups</th> <th>Exp. Time (Total)/[Actual Dur.]</th> <th>Orbit</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>ACQ (COS.ta.619 788)</td> <td>(5) VV2006-J125901 .7+413055</td> <td>COS/NUV, ACQ/IMAGE, PSA</td> <td>MIRRORB</td> <td></td> <td></td> <td></td> <td>75 Secs (75 Secs) [==&gt;]</td> <td>[1]</td> </tr> <tr> <td>2</td> <td>G130M - 1291 - FP1 - o1 (COS.sp.622 253)</td> <td>(5) VV2006-J125901 .7+413055</td> <td>COS/FUV, TIME-TAG, PSA</td> <td>G130M 1291 A</td> <td>FP-POS=1; BUFFER-TIME=35 00</td> <td></td> <td></td> <td>2490 Secs (2490 Secs) [==&gt;]</td> <td>[1]</td> </tr> <tr> <td>3</td> <td>G130M - 1291 - FP2 - o2 (COS.sp.622 254)</td> <td>(5) VV2006-J125901 .7+413055</td> <td>COS/FUV, TIME-TAG, PSA</td> <td>G130M 1291 A</td> <td>FP-POS=2; BUFFER-TIME=35 00</td> <td></td> <td></td> <td>3030 Secs (3030 Secs) [==&gt;]</td> <td>[2]</td> </tr> <tr> <td>4</td> <td>G130M - 1291 - FP3 - o3 (COS.sp.621 747)</td> <td>(5) VV2006-J125901 .7+413055</td> <td>COS/FUV, TIME-TAG, PSA</td> <td>G130M 1291 A</td> <td>FP-POS=3; BUFFER-TIME=35 00</td> <td></td> <td></td> <td>1448 Secs (1448 Secs) [==&gt;]</td> <td>[3]</td> </tr> <tr> <td>5</td> <td>G130M - 1291 - FP4 - o3 (COS.sp.621 747)</td> <td>(5) VV2006-J125901 .7+413055</td> <td>COS/FUV, TIME-TAG, PSA</td> <td>G130M 1291 A</td> <td>FP-POS=4; BUFFER-TIME=35 00</td> <td></td> <td></td> <td>1448 Secs (1448 Secs) [==&gt;]</td> <td>[3]</td> </tr> </tbody> </table>	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	1	ACQ (COS.ta.619 788)	(5) VV2006-J125901 .7+413055	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				75 Secs (75 Secs) [==>]	[1]	2	G130M - 1291 - FP1 - o1 (COS.sp.622 253)	(5) VV2006-J125901 .7+413055	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=1; BUFFER-TIME=35 00			2490 Secs (2490 Secs) [==>]	[1]	3	G130M - 1291 - FP2 - o2 (COS.sp.622 254)	(5) VV2006-J125901 .7+413055	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=2; BUFFER-TIME=35 00			3030 Secs (3030 Secs) [==>]	[2]	4	G130M - 1291 - FP3 - o3 (COS.sp.621 747)	(5) VV2006-J125901 .7+413055	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=35 00			1448 Secs (1448 Secs) [==>]	[3]	5	G130M - 1291 - FP4 - o3 (COS.sp.621 747)	(5) VV2006-J125901 .7+413055	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=4; BUFFER-TIME=35 00			1448 Secs (1448 Secs) [==>]	[3]
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	3	G130M - 1291 - FP2 - o2 (COS.sp.622 254)	(5) VV2006-J125901 .7+413055	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=2; BUFFER-TIME=35 00			3030 Secs (3030 Secs) [==>]	[2]																																																			
	4	G130M - 1291 - FP3 - o3 (COS.sp.621 747)	(5) VV2006-J125901 .7+413055	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=35 00			1448 Secs (1448 Secs) [==>]	[3]																																																			
5	G130M - 1291 - FP4 - o3 (COS.sp.621 747)	(5) VV2006-J125901 .7+413055	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=4; BUFFER-TIME=35 00			1448 Secs (1448 Secs) [==>]	[3]																																																				



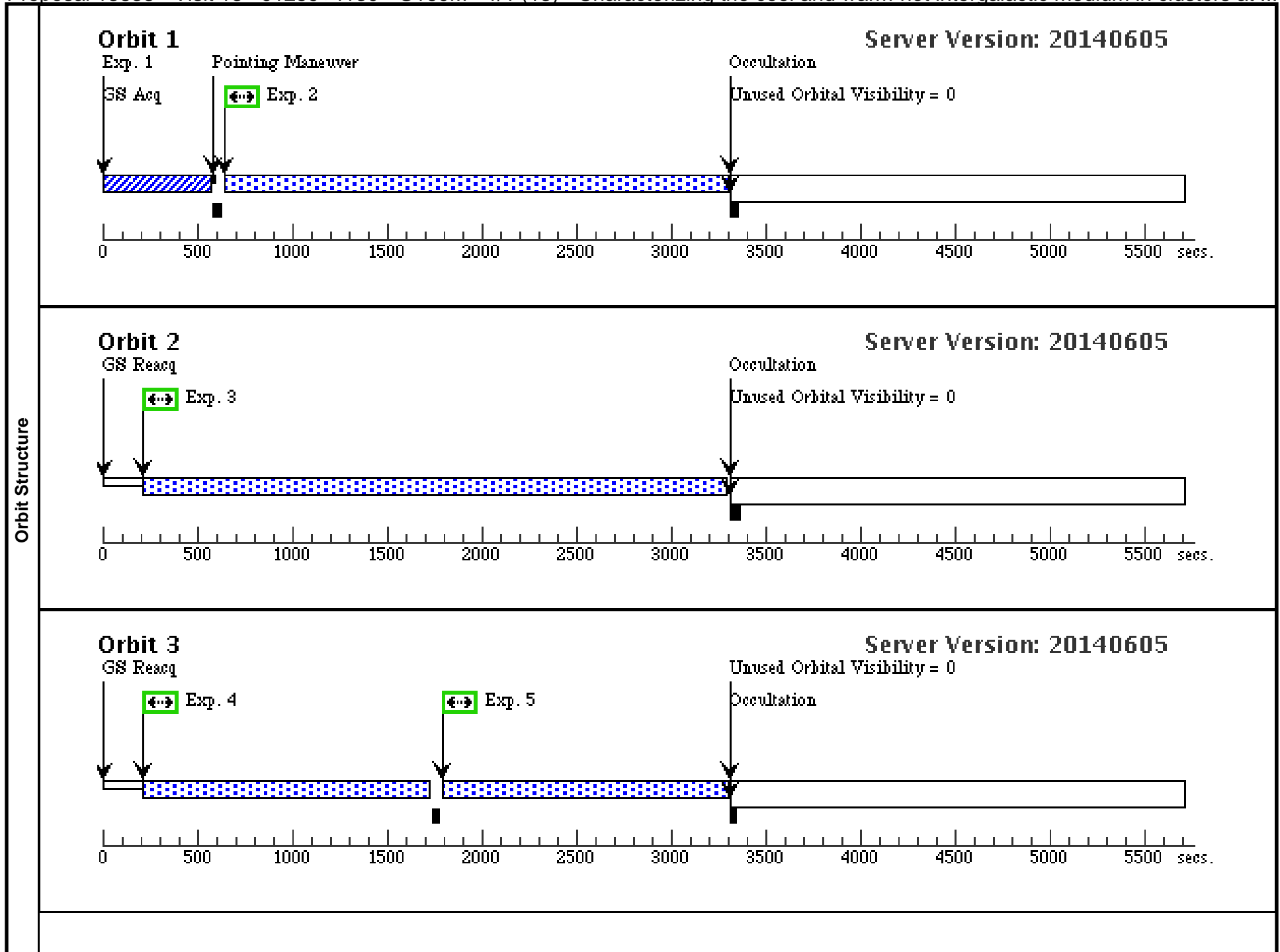
Orbit Structure

Proposal 13833 - Visit 13 - J1259+4130 - G160M - 1/1 (13) - Characterizing the cool and warm-hot intergalactic medium in clusters at ...

<b>Visit</b>	<p><b>Proposal 13833, Visit 13 - J1259+4130 - G160M - 1/1 (13), implementation</b> <span style="float: right;">Wed Jul 23 01:19:31 GMT 2014</span></p> <p><b>Diagnostic Status: No Diagnostics</b></p> <p>Scientific Instruments: COS/NUV, COS/FUV</p> <p>Special Requirements: (none)</p> <p><i>Comments: This visit corresponds to the visit 1/1 of the J1259+4130 using G160M:</i></p> <ul style="list-style-type: none"> <li>- 5 orbits in total</li> <li>- 2 central wavelengths (1589A and 1611A)</li> <li>- 4 FP-POS in total per central wavelength (1 FP-POS first 2 orbits, subsequent orbits 2 FP-POS)</li> </ul>					
	<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>
(5)		VV2006- J125901.7+413055	RA: 12 59 1.6766 (194.7569858d) Dec: +41 30 55.85 (41.51551d) Equinox: J2000		V=17.03 FUV=18.38	Reference Frame: ICRS
<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p>						

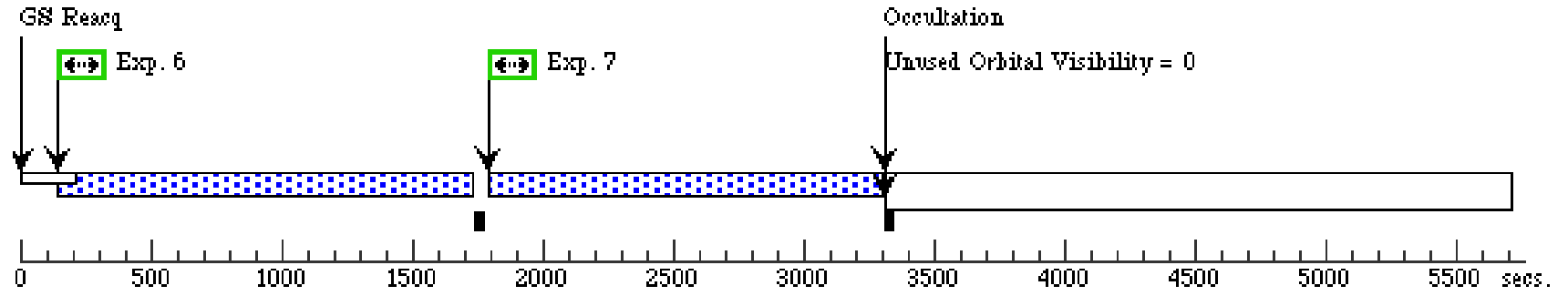
Proposal 13833 - Visit 13 - J1259+4130 - G160M - 1/1 (13) - Characterizing the cool and warm-hot intergalactic medium in clusters at ...

Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
	1	ACQ (COS.ta.619 788)	(5) VV2006-J125901 .7+413055	COS/NUV, ACQ/IMAGE, PSA	MIRRORB					75 Secs (75 Secs) [==>]	[1]
	2	G160M - 1589 - FP1 - o1 (COS.sp.622 258)	(5) VV2006-J125901 .7+413055	COS/FUV, TIME-TAG, PSA	G160M 1589 A	FP-POS=1; BUFFER-TIME=85 00			2447 Secs (2447 Secs) [==>]	[1]	
	3	G160M - 1589 - FP2 - o2 (COS.sp.622 259)	(5) VV2006-J125901 .7+413055	COS/FUV, TIME-TAG, PSA	G160M 1589 A	FP-POS=2; BUFFER-TIME=85 00			3030 Secs (3030 Secs) [==>]	[2]	
	4	G160M - 1589 - FP3 - o3 (COS.sp.619 843)	(5) VV2006-J125901 .7+413055	COS/FUV, TIME-TAG, PSA	G160M 1589 A	FP-POS=3; BUFFER-TIME=85 00			1458 Secs (1458 Secs) [==>]	[3]	
	5	G160M - 1589 - FP4 - o3 (COS.sp.619 843)	(5) VV2006-J125901 .7+413055	COS/FUV, TIME-TAG, PSA	G160M 1589 A	FP-POS=4; BUFFER-TIME=85 00			1457 Secs (1457 Secs) [==>]	[3]	
	6	G160M - 1611 - FP1 - o4 (COS.sp.619 842)	(5) VV2006-J125901 .7+413055	COS/FUV, TIME-TAG, PSA	G160M 1611 A	FP-POS=1; BUFFER-TIME=86 00			1458 Secs (1458 Secs) [==>]	[4]	
	7	G160M - 1611 - FP2 - o4 (COS.sp.619 842)	(5) VV2006-J125901 .7+413055	COS/FUV, TIME-TAG, PSA	G160M 1611 A	FP-POS=2; BUFFER-TIME=86 00			1457 Secs (1457 Secs) [==>]	[4]	
	8	G160M - 1611 - FP3 - o5 (COS.sp.619 842)	(5) VV2006-J125901 .7+413055	COS/FUV, TIME-TAG, PSA	G160M 1611 A	FP-POS=3; BUFFER-TIME=86 00			1458 Secs (1458 Secs) [==>]	[5]	
	9	G160M - 1611 - FP4 - o5 (COS.sp.619 842)	(5) VV2006-J125901 .7+413055	COS/FUV, TIME-TAG, PSA	G160M 1611 A	FP-POS=4; BUFFER-TIME=86 00			1457 Secs (1457 Secs) [==>]	[5]	



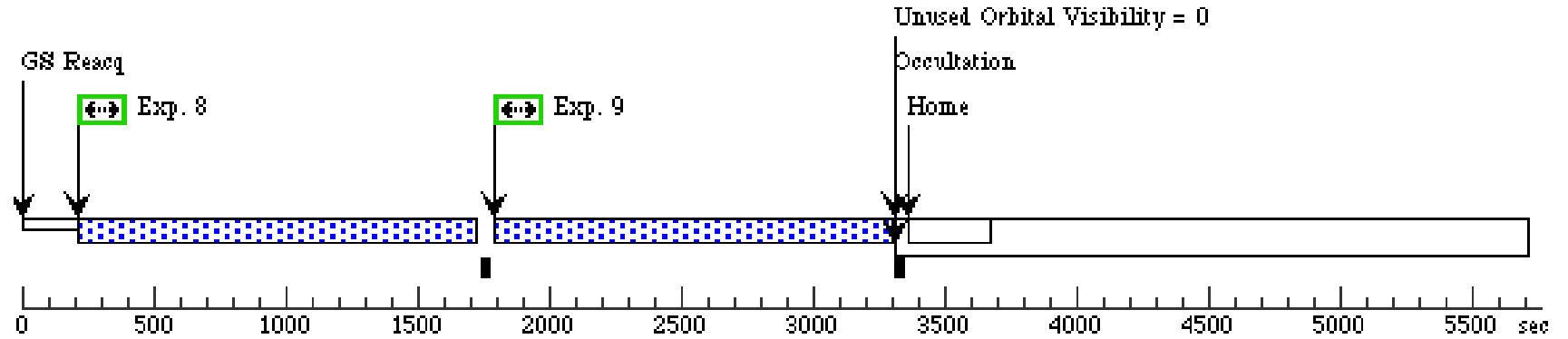
**Orbit 4**

Server Version: 20140605



**Orbit 5**

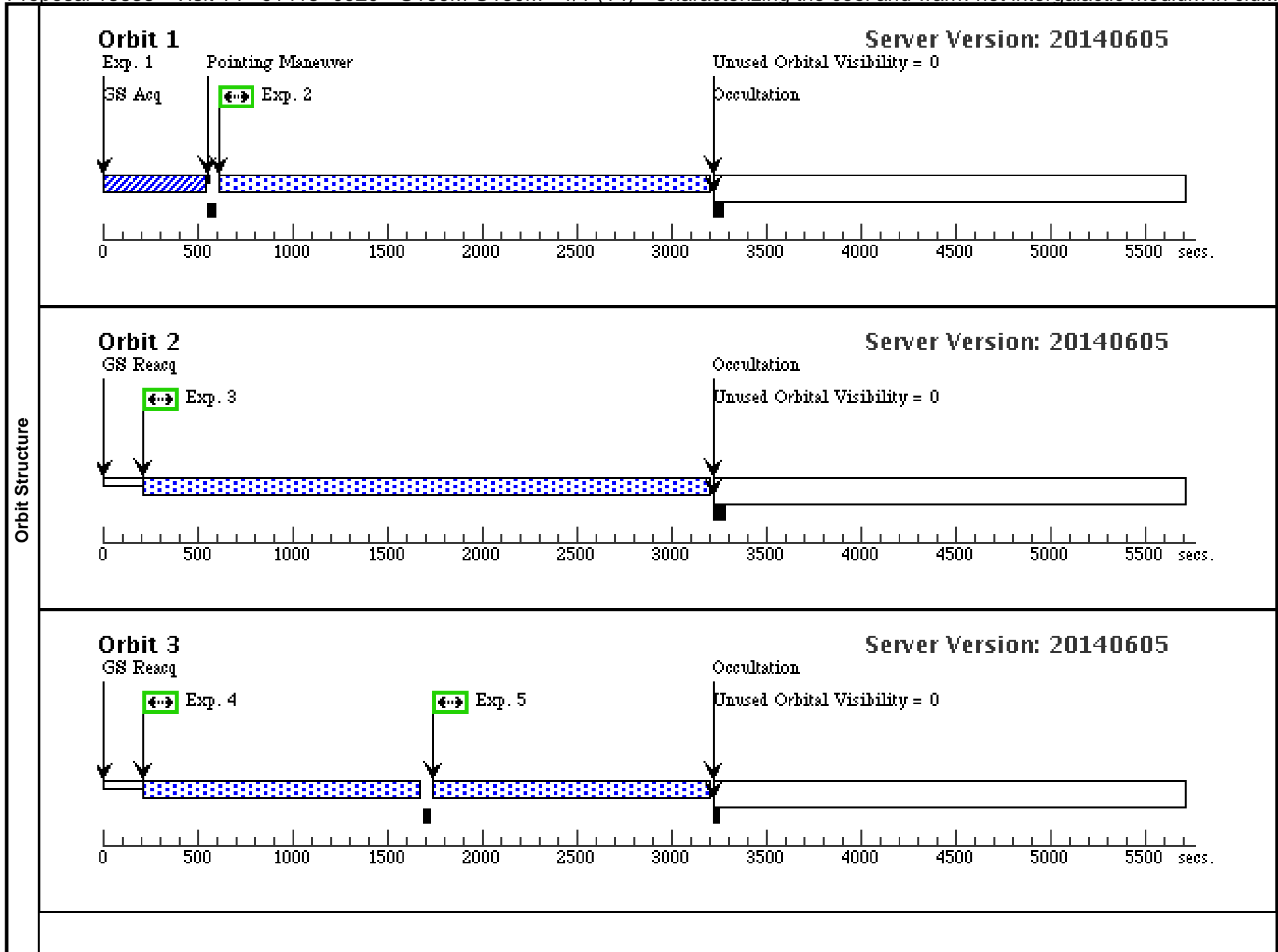
Server Version: 20140605



Proposal 13833 - Visit 14 - J1413+0920 - G130M G160M - 1/1 (14) - Characterizing the cool and warm-hot intergalactic medium in clu...

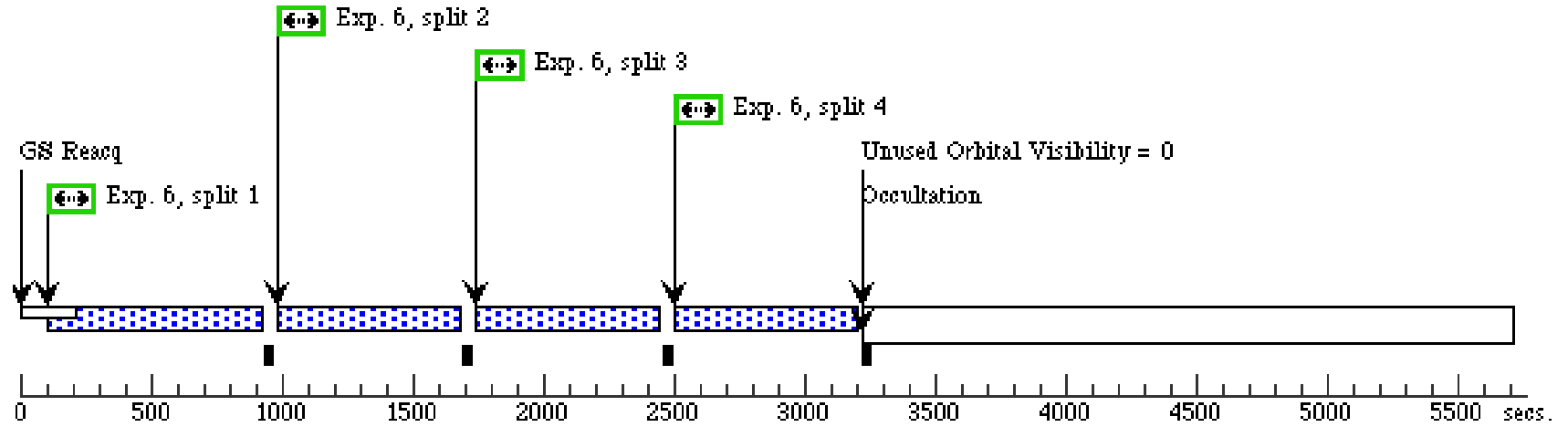
Wed Jul 23 01:19:31 GMT 2014

Visit	<b>Proposal 13833, Visit 14 - J1413+0920 - G130M G160M - 1/1 (14), implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: COS/NUV, COS/FUV Special Requirements: (none) Comments: This visit corresponds to the visit 1/1 of the J1413+0920 using G130M and G160M: - 5 orbits in total - 2 orbits in G130M (1291 and 1309A) - 3 orbits in G160M (1577)																		
	Fixed Targets	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(6)</td> <td>SDSS- J141309.14+092011.2</td> <td>RA: 14 13 9.1000 (213.2879167d) Dec: +09 20 11.00 (9.33639d) Equinox: J2000</td> <td></td> <td>V=17.06 FUV=17.47</td> <td>Reference Frame: ICRS</td> </tr> <tr> <td colspan="6">Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</td> </tr> </tbody> </table>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(6)	SDSS- J141309.14+092011.2	RA: 14 13 9.1000 (213.2879167d) Dec: +09 20 11.00 (9.33639d) Equinox: J2000		V=17.06 FUV=17.47	Reference Frame: ICRS	Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.				
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Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit									
	1	ACQ (COS.ta.621 717)	(6) SDSS-J141309.1 4+092011.2	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				60 Secs (60 Secs) [==>]	[1]									
	2	G160M - 1577 - FP1 - o1 (COS.sp.622 264)	(6) SDSS-J141309.1 4+092011.2	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FP-POS=1; BUFFER-TIME=64 00			2380 Secs (2380 Secs) [==>]	[1]									
	3	G160M - 1577 - FP2 - o2 (COS.sp.622 265)	(6) SDSS-J141309.1 4+092011.2	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FP-POS=2; BUFFER-TIME=64 00			2936 Secs (2936 Secs) [==>]	[2]									
	4	G160M - 1577 - FP3 - o3 (COS.sp.621 740)	(6) SDSS-J141309.1 4+092011.2	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FP-POS=3; BUFFER-TIME=64 00			1410 Secs (1410 Secs) [==>]	[3]									
	5	G160M - 1577 - FP4 - o3 (COS.sp.621 740)	(6) SDSS-J141309.1 4+092011.2	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FP-POS=4; BUFFER-TIME=64 00			1411 Secs (1411 Secs) [==>]	[3]									
	6	G130M - 1291 - FPA - o4 (COS.sp.621 742)	(6) SDSS-J141309.1 4+092011.2	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=ALL; BUFFER-TIME=30 00			647 Secs (2589 Secs) [==>648.0 Secs (Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)]	[4]									
	7	G130M - 1291 - FPA - o5 (COS.sp.621 743)	(6) SDSS-J141309.1 4+092011.2	COS/FUV, TIME-TAG, PSA	G130M 1309 A	FP-POS=ALL; BUFFER-TIME=31 00			648 Secs (2591 Secs) [==>647.0 Secs (Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)]	[5]									



### Orbit 4

Server Version: 20140605



### Orbit 5

Server Version: 20140605

