13423 - Primordial lithium in z~0, metal-poor damped Lyman alpha systems

Cycle: 21, Proposal Category: GO

(UV Initiative)

(Availability Mode: SUPPORTED)

INVESTIGATORS

Name	*Institution*	*E-Mail*
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VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) J0904P4007	COS/FUV COS/NUV	2	22-Jun-2013 21:03:27.0	yes
02	(2) J1004P0513	COS/FUV COS/NUV	1	22-Jun-2013 21:03:38.0	yes
03	(3) J1010P2559	COS/FUV COS/NUV	2	22-Jun-2013 21:03:46.0	yes
04	(4) J1156P1745	COS/FUV COS/NUV	2	22-Jun-2013 21:03:55.0	yes
05	(5) J1419P3203	COS/FUV COS/NUV	1	22-Jun-2013 21:04:04.0	yes
06	(6) J1454P1114	COS/FUV COS/NUV	1	22-Jun-2013 21:04:12.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
07	(7) J1456P2750	COS/FUV COS/NUV	1	22-Jun-2013 21:04:20.0	yes
08	(8) J1544P2827	COS/FUV COS/NUV	1	22-Jun-2013 21:04:27.0	yes
09	(9) J2236P1343	COS/FUV COS/NUV	1	22-Jun-2013 21:04:35.0	yes

12 Total Orbits Used

ABSTRACT

A longstanding challenge for the standard model of Big Bang Nucleosynthesis is to explain the discrepancy between the predicted and observed primordial lithium abundance; the most metal-poor stars are deficient in Li by a factor of 3-4 relative to the standard model prediction. We propose to use the combined efforts of HST+COS and ground-based optical echelle spectrographs, to measure the primordial Li abundance in clouds of near-pristine gas at low redshift. To this end, we have compiled a prime list of sure candidate low-redshift damped Lyman-alpha systems (DLAs) that are in front of bright quasars. This combination is essential to detect the weak Li absorption lines arising in the ISM of external galaxies. For a small investment of HST time, we will confirm these systems as new low-redshift DLAs -- almost tripling the current number of known systems -- and discern the optimum clouds where the primordial abundance of Li can be measured. The sought-after data will also provide new opportunities to study the detailed properties of DLAs and their host galaxies, as well as the greater environments in which they reside.

OBSERVING DESCRIPTION

Summary: The main goal of our HST+COS program is to discover damped Lyman-alpha systems (DLAs) at low redshift (z_abs < 0.3) and in front of bright quasars. The two primary objectives are to: (1) Find metal-poor DLAs where we can measure the primordial abundance of Li; and (2) understand the properties of low-redshift DLAs.

Targets and Acquisition: We will target 9 quasars total, with FUV magnitudes in the range 16.7-17.8, which intersect 11 candidate DLAs. Since our target coordinates are precisely known from SDSS, we will acquire our targets with the ACQ/IMAGE acquisition mode. Using the GALEX FUV magnitudes of our targets, we have calculated the exposure times that are required to achieve the recommended S/N of 40 (ETC ID numbers are provided). We have increased these exposure times by 20 per cent to account for QSO variability.

Science Exposures: We will observe in TIME-TAG mode, and use the standard wavelength calibration procedures (i.e. with TAGFLASH=YES). We will observe each system at all four FP-POS settings (obtained in increasing order). We have performed an ETC calculation for each grating setup (ETC ID numbers are provided). We opted to dump the buffer 100s before the end of each science exposure to minimize the TIME-TAG memory read-out times between exposures. To achieve our science goals, we only require a final combined S/N ~ 10 at certain wavelengths, which will be satisfied for most targets with just one orbit.

Bright-Object Protection: Both local and global limits are confirmed as safe for the target fields to be observed. Our targets are several magnitudes fainter than the unsafe limits. We expect that the brightest feature in our spectrum will be the geocoronal Lyman-alpha airglow emission line.

Visit

Proposal 13423, J0904p4007 (01) Sun Jun 23 01:04:44 GMT 2013

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

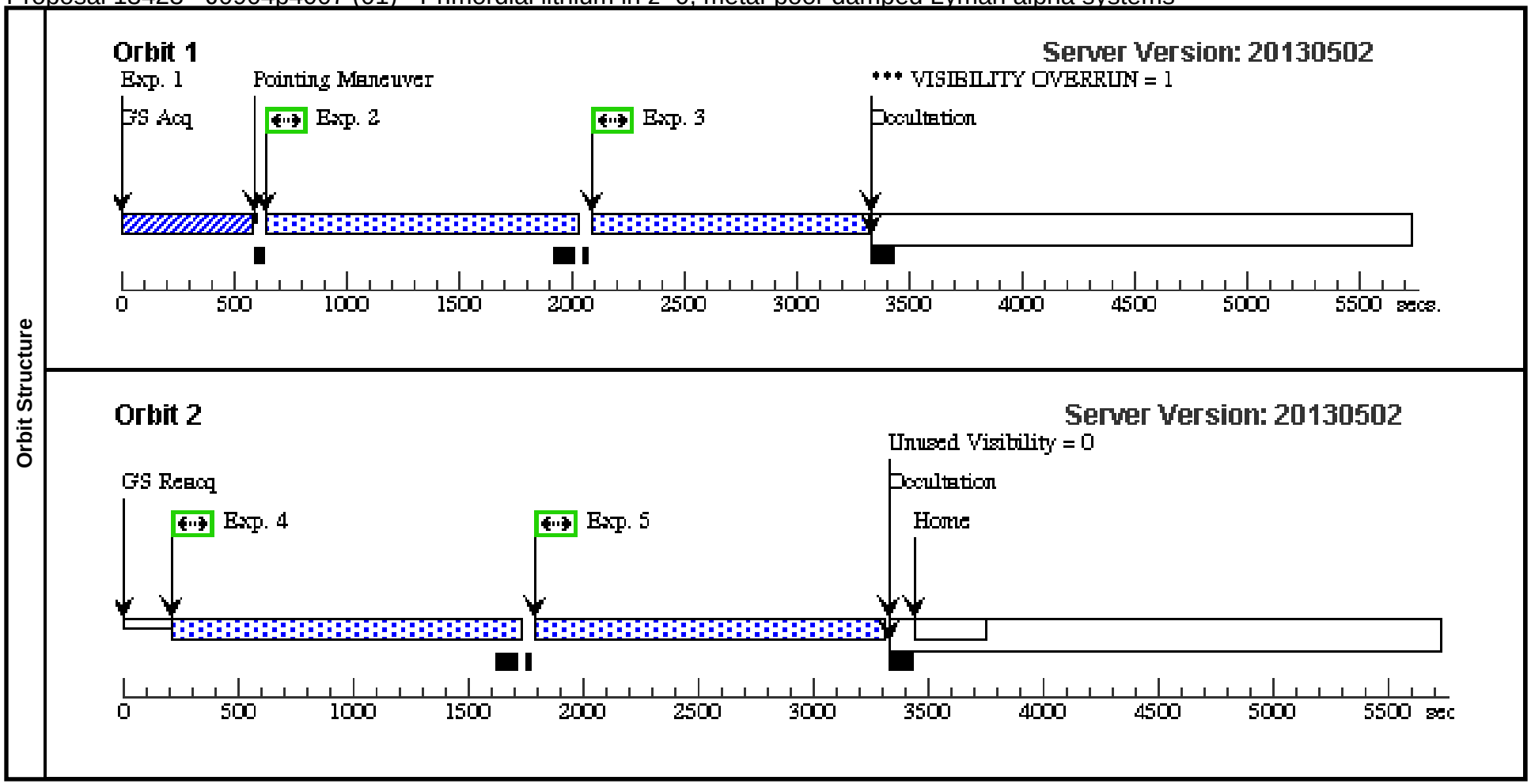
(J0904p4007 (01)) Warning (Orbit Planner): VISIBILITY OVERRUN

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	J0904P4007	RA: 09 04 23.3100 (136.0971250d) Dec: +40 07 4.70 (40.11797d) Equinox: J2000	Epoch of Position: 2000.0 Redshift: 0.410	V=17.06+/-0.1 FUV magnitude=17.75	Reference Frame: ICRS

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Target-ACQ (ta.515123)	(1) J0904P4007	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				73 Secs (73 Secs) *[==>]*	*[1]*
Comments: Exposure time increased by 20% to allow for QSO variability									
2	FP-POS1 (sp.515674)	(1) J0904P4007	COS/FUV, TIME-TAG, PSA	G160M 1589 A	BUFFER-TIME=1075; FP-POS=1; FLASH=YES; SEGMENT=BOTH			1175 Secs (1175 Secs) *[==>]*	*[1]*
3	FP-POS2 (sp.515674)	(1) J0904P4007	COS/FUV, TIME-TAG, PSA	G160M 1589 A	BUFFER-TIME=1175; FP-POS=2; FLASH=YES; SEGMENT=BOTH			1175 Secs (1175 Secs) *[==>]*	*[1]*
4	FP-POS3 (sp.515675)	(1) J0904P4007	COS/FUV, TIME-TAG, PSA	G160M 1589 A	BUFFER-TIME=1371; FP-POS=3; FLASH=YES; SEGMENT=BOTH			1471 Secs (1471 Secs) *[==>]*	*[2]*
5	FP-POS4 (sp.515675)	(1) J0904P4007	COS/FUV, TIME-TAG, PSA	G160M 1589 A	BUFFER-TIME=1471; FP-POS=4; FLASH=YES; SEGMENT=BOTH			1471 Secs (1471 Secs) *[==>]*	*[2]*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Exp. 1
GS Acq
Pointing Maneuver
Exp. 2
Exp. 3
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1500
2000
2500
3000
3500
4000
4500
5000
5500
secs.
Orbit 2
Server Version: 20130502
Unused Visibility = 0
GS Reacq
Exp. 4
Exp. 5
Occultation
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 13423, J1004p0513 (02) Sun Jun 23 01:04:49 GMT 2013

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

(J1004p0513 (02)) Warning (Orbit Planner): VISIBILITY OVERRUN

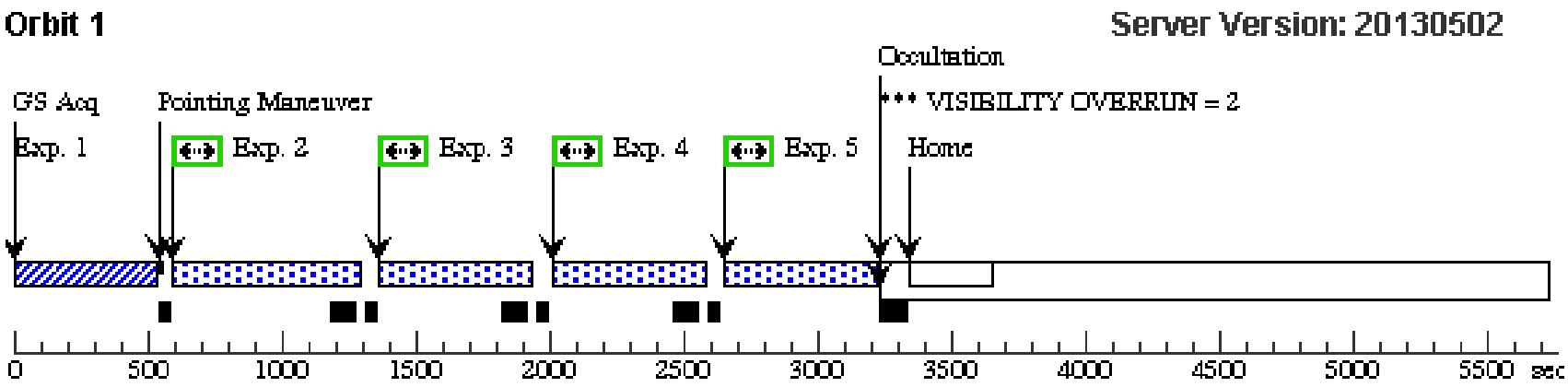
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	J1004P0513	RA: 10 04 20.1300 (151.0838750d) Dec: +05 13 0.40 (5.21678d) Equinox: J2000	Epoch of Position: 2000.0 Redshift: 0.160	V=16.41+/-0.1 FUV magnitude=17.11	Reference Frame: ICRS

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Target-ACQ (ta.515174)	(2) J1004P0513	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				48 Secs (48 Secs) *[==>]*	*[1]*
Comments: Exposure time increased by 20% to allow for QSO variability									
2	FP-POS1 (sp.515676)	(2) J1004P0513	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=417; FP-POS=1; FLASH=YES; SEGMENT=BOTH			517 Secs (517 Secs) *[==>]*	*[1]*
3	FP-POS2 (sp.515676)	(2) J1004P0513	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=417; FP-POS=2; FLASH=YES; SEGMENT=BOTH			517 Secs (517 Secs) *[==>]*	*[1]*
4	FP-POS3 (sp.515676)	(2) J1004P0513	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=417; FP-POS=3; FLASH=YES; SEGMENT=BOTH			517 Secs (517 Secs) *[==>]*	*[1]*
5	FP-POS4 (sp.515676)	(2) J1004P0513	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=517; FP-POS=4; FLASH=YES; SEGMENT=BOTH			517 Secs (517 Secs) *[==>]*	*[1]*

Orbit Structure



Visit

Proposal 13423, J1010p2559 (03) Sun Jun 23 01:04:50 GMT 2013

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

(J1010p2559 (03)) Warning (Orbit Planner): VISIBILITY OVERRUN

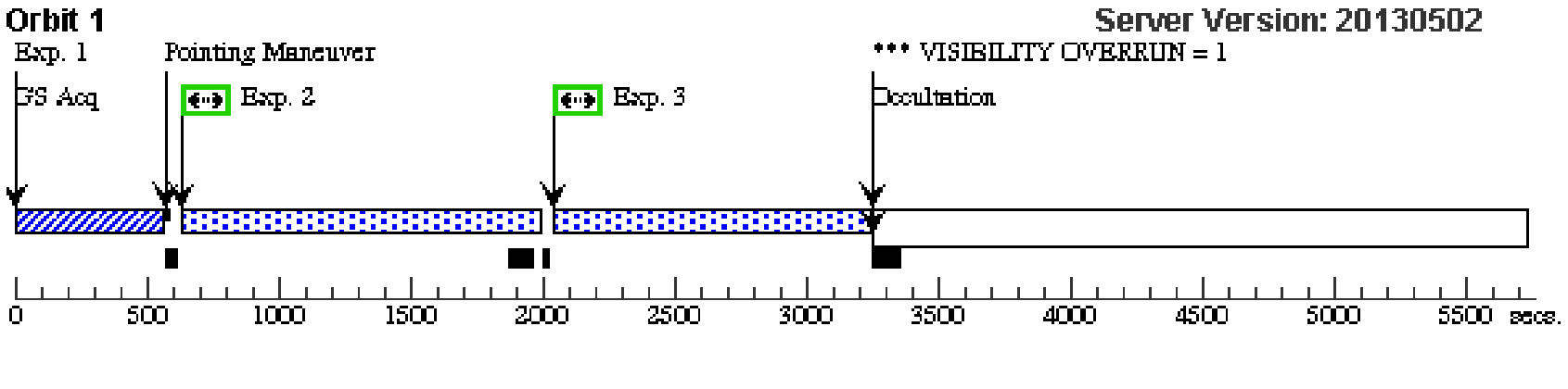
Fixed Targets

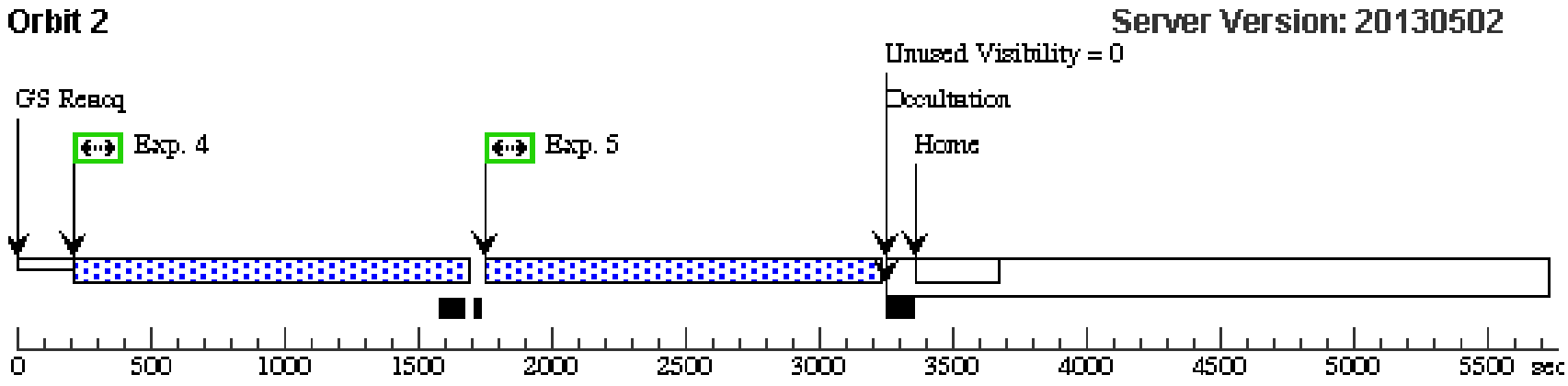
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	J1010P2559	RA: 10 10 30.5400 (152.6272500d) Dec: +25 59 49.40 (25.99706d) Equinox: J2000	Epoch of Position: 2000.0 Redshift: 0.511	V=16.53+/-0.1 FUV magnitude=17.83	Reference Frame: ICRS

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Target-ACQ (ta.515179)	(3) J1010P2559	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				65 Secs (65 Secs) *[==>]*	*[1]*
Comments: Exposure time increased by 20% to allow for QSO variability									
2	FP-POS1 (sp.515677)	(3) J1010P2559	COS/FUV, TIME-TAG, PSA	G160M 1589 A	BUFFER-TIME=1043; FP-POS=1; FLASH=YES; SEGMENT=BOTH			1143 Secs (1143 Secs) *[==>]*	*[1]*
3	FP-POS2 (sp.515677)	(3) J1010P2559	COS/FUV, TIME-TAG, PSA	G160M 1589 A	BUFFER-TIME=1143; FP-POS=2; FLASH=YES; SEGMENT=BOTH			1143 Secs (1143 Secs) *[==>]*	*[1]*
4	FP-POS3 (sp.515678)	(3) J1010P2559	COS/FUV, TIME-TAG, PSA	G160M 1589 A	BUFFER-TIME=1331; FP-POS=3; FLASH=YES; SEGMENT=BOTH			1431 Secs (1431 Secs) *[==>]*	*[2]*
5	FP-POS4 (sp.515678)	(3) J1010P2559	COS/FUV, TIME-TAG, PSA	G160M 1589 A	BUFFER-TIME=1431; FP-POS=4; FLASH=YES; SEGMENT=BOTH			1431 Secs (1431 Secs) *[==>]*	*[2]*

Orbit Structure





Visit

Proposal 13423, J1156p1745 (04) Sun Jun 23 01:04:52 GMT 2013

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

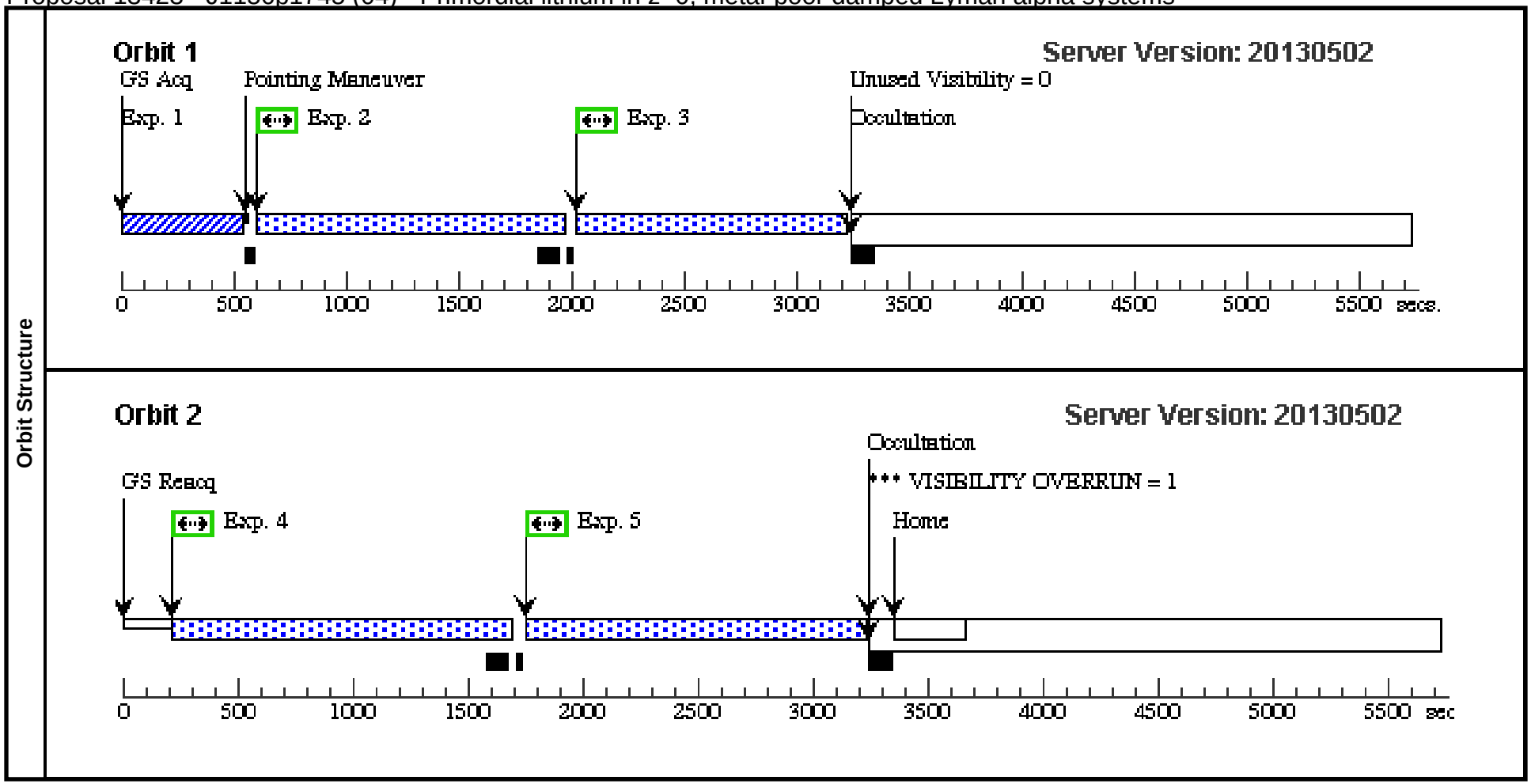
(J1156p1745 (04)) Warning (Orbit Planner): VISIBILITY OVERRUN

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	J1156P1745	RA: 11 56 52.8900 (179.2203750d) Dec: +17 45 54.00 (17.76500d) Equinox: J2000	Epoch of Position: 2000.0 Redshift: 0.522	V=16.58+/-0.1 FUV magnitude=17.56	Reference Frame: ICRS

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Target-ACQ (ta.515186)	(4) J1156P1745	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				52 Secs (52 Secs) *[==>]*	*[1]*
Comments: Exposure time increased by 20% to allow for QSO variability									
2	FP-POS1 (sp.515680)	(4) J1156P1745	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=1051; FP-POS=1; FLASH=YES; SEGMENT=BOTH			1151 Secs (1151 Secs) *[==>]*	*[1]*
3	FP-POS2 (sp.515680)	(4) J1156P1745	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=1151; FP-POS=2; FLASH=YES; SEGMENT=BOTH			1151 Secs (1151 Secs) *[==>]*	*[1]*
4	FP-POS3 (sp.515681)	(4) J1156P1745	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=1327; FP-POS=3; FLASH=YES; SEGMENT=BOTH			1427 Secs (1427 Secs) *[==>]*	*[2]*
5	FP-POS4 (sp.515681)	(4) J1156P1745	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=1427; FP-POS=4; FLASH=YES; SEGMENT=BOTH			1427 Secs (1427 Secs) *[==>]*	*[2]*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Pointing Maneuver
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Exp. 2
Exp. 3
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secs.
Orbit 2
Server Version: 20130502
Occultation
GS Reacq
*** VISIBILITY OVERRUN = 1
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Exp. 5
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4000
4500
5000
5500
sec

Visit

Proposal 13423, J1419p3203 (05) Sun Jun 23 01:04:54 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

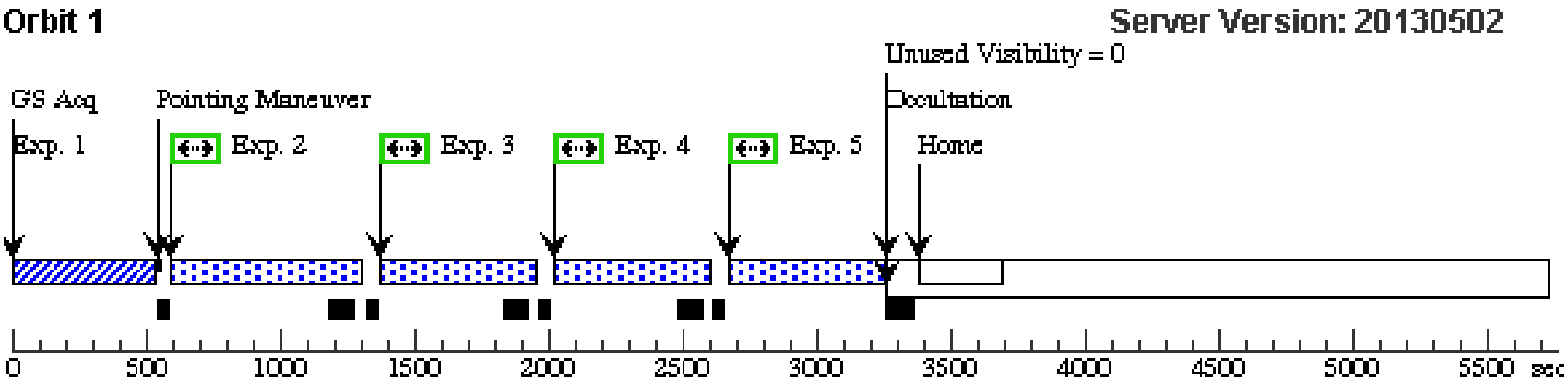
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(5)	J1419P3203	RA: 14 19 16.7100 (214.8196250d) Dec: +32 03 2.90 (32.05081d) Equinox: J2000	Epoch of Position: 2000.0 Redshift: 0.385	V=17.09+/-0.1 FUV magnitude=17.23	Reference Frame: ICRS

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Target-ACQ (ta.515197)	(5) J1419P3203	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				48 Secs (48 Secs) *[==>]*	***[1]***
Comments: Exposure time increased by 20% to allow for QSO variability									
2	FP-POS1 (sp.515682)	(5) J1419P3203	COS/FUV, TIME-TAG, PSA	G130M 1327 A	BUFFER-TIME=425; FP-POS=1; FLASH=YES; SEGMENT=BOTH			525 Secs (525 Secs) *[==>]*	***[1]***
3	FP-POS2 (sp.515682)	(5) J1419P3203	COS/FUV, TIME-TAG, PSA	G130M 1327 A	BUFFER-TIME=425; FP-POS=2; FLASH=YES; SEGMENT=BOTH			525 Secs (525 Secs) *[==>]*	***[1]***
4	FP-POS3 (sp.515682)	(5) J1419P3203	COS/FUV, TIME-TAG, PSA	G130M 1327 A	BUFFER-TIME=425; FP-POS=3; FLASH=YES; SEGMENT=BOTH			525 Secs (525 Secs) *[==>]*	***[1]***
5	FP-POS4 (sp.515682)	(5) J1419P3203	COS/FUV, TIME-TAG, PSA	G130M 1327 A	BUFFER-TIME=525; FP-POS=4; FLASH=YES; SEGMENT=BOTH			525 Secs (525 Secs) *[==>]*	***[1]***

Orbit Structure



Visit

Proposal 13423, J1454p1114 (06) Sun Jun 23 01:04:55 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

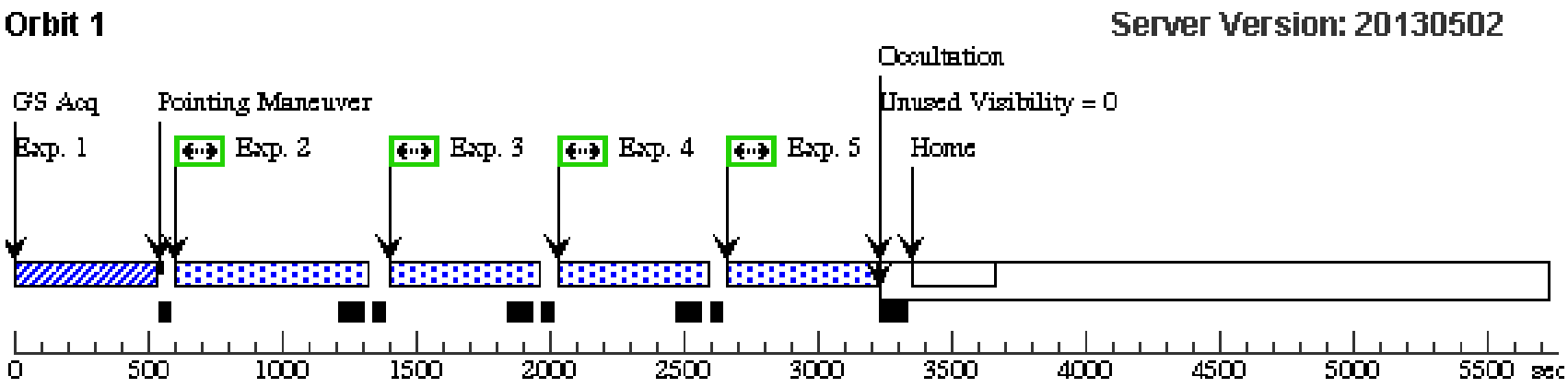
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(6)	J1454P1114	RA: 14 54 50.0200 (223.7084167d) Dec: +11 14 34.40 (11.24289d) Equinox: J2000	Epoch of Position: 2000.0 Redshift: 0.467	V=16.51+/-0.1 FUV magnitude=17.47	Reference Frame: ICRS

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Target-ACQ (ta.515207)	(6) J1454P1114	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				51 Secs (51 Secs) *[==>]*	 ***[1]***
Comments: Exposure time increased by 20% to allow for QSO variability									
2	FP-POS1 (sp.515683)	(6) J1454P1114	COS/FUV, TIME-TAG, PSA	G160M 1600 A	BUFFER-TIME=408; FP-POS=1; FLASH=YES; SEGMENT=BOTH			508 Secs (508 Secs) *[==>]*	 ***[1]***
3	FP-POS2 (sp.515683)	(6) J1454P1114	COS/FUV, TIME-TAG, PSA	G160M 1600 A	BUFFER-TIME=408; FP-POS=2; FLASH=YES; SEGMENT=BOTH			508 Secs (508 Secs) *[==>]*	 ***[1]***
4	FP-POS3 (sp.515683)	(6) J1454P1114	COS/FUV, TIME-TAG, PSA	G160M 1600 A	BUFFER-TIME=408; FP-POS=3; FLASH=YES; SEGMENT=BOTH			508 Secs (508 Secs) *[==>]*	 ***[1]***
5	FP-POS4 (sp.515683)	(6) J1454P1114	COS/FUV, TIME-TAG, PSA	G160M 1600 A	BUFFER-TIME=508; FP-POS=4; FLASH=YES; SEGMENT=BOTH			508 Secs (508 Secs) *[==>]*	 ***[1]***

Orbit Structure



Visit

Proposal 13423, J1456p2750 (07) Sun Jun 23 01:04:56 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

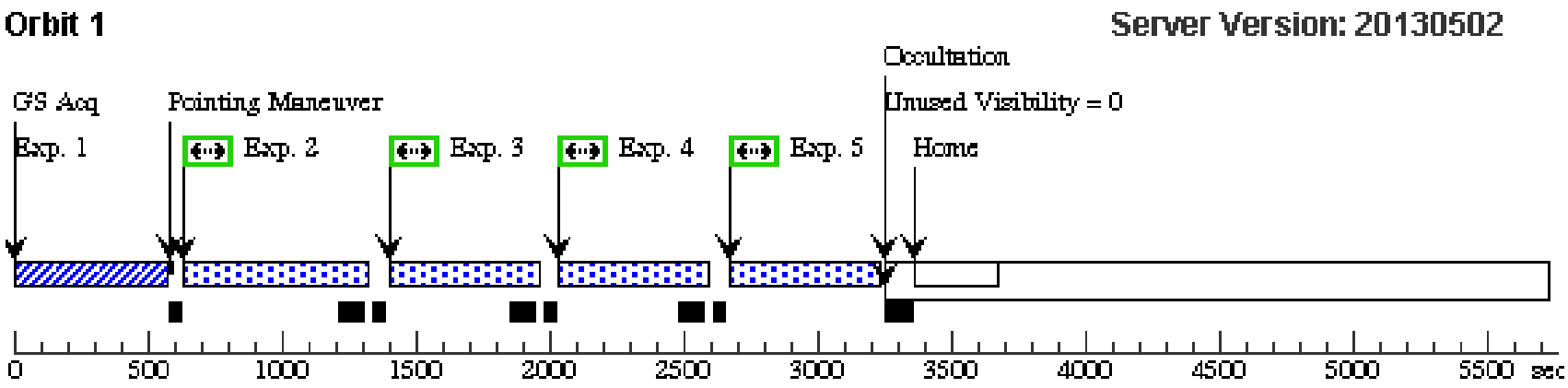
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(7)	J1456P2750	RA: 14 56 8.6500 (224.0360417d) Dec: +27 50 8.70 (27.83575d) Equinox: J2000	Epoch of Position: 2000.0 Redshift: 0.248	V=17.16+/-0.1 FUV magnitude=17.41	Reference Frame: ICRS

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Target-ACQ (ta.515211)	(7) J1456P2750	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				67 Secs (67 Secs) *[==>]*	 ***[1]***
Comments: Exposure time increased by 20% to allow for QSO variability									
2	FP-POS1 (sp.515684)	(7) J1456P2750	COS/FUV, TIME-TAG, PSA	G130M 1318 A	BUFFER-TIME=412; FP-POS=1; FLASH=YES; SEGMENT=BOTH			512 Secs (512 Secs) *[==>]*	 ***[1]***
3	FP-POS2 (sp.515684)	(7) J1456P2750	COS/FUV, TIME-TAG, PSA	G130M 1318 A	BUFFER-TIME=412; FP-POS=2; FLASH=YES; SEGMENT=BOTH			512 Secs (512 Secs) *[==>]*	 ***[1]***
4	FP-POS3 (sp.515684)	(7) J1456P2750	COS/FUV, TIME-TAG, PSA	G130M 1318 A	BUFFER-TIME=412; FP-POS=3; FLASH=YES; SEGMENT=BOTH			512 Secs (512 Secs) *[==>]*	 ***[1]***
5	FP-POS4 (sp.515684)	(7) J1456P2750	COS/FUV, TIME-TAG, PSA	G130M 1318 A	BUFFER-TIME=512; FP-POS=4; FLASH=YES; SEGMENT=BOTH			512 Secs (512 Secs) *[==>]*	 ***[1]***

Orbit Structure



Visit

Proposal 13423, J1544p2827 (08) Sun Jun 23 01:04:57 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

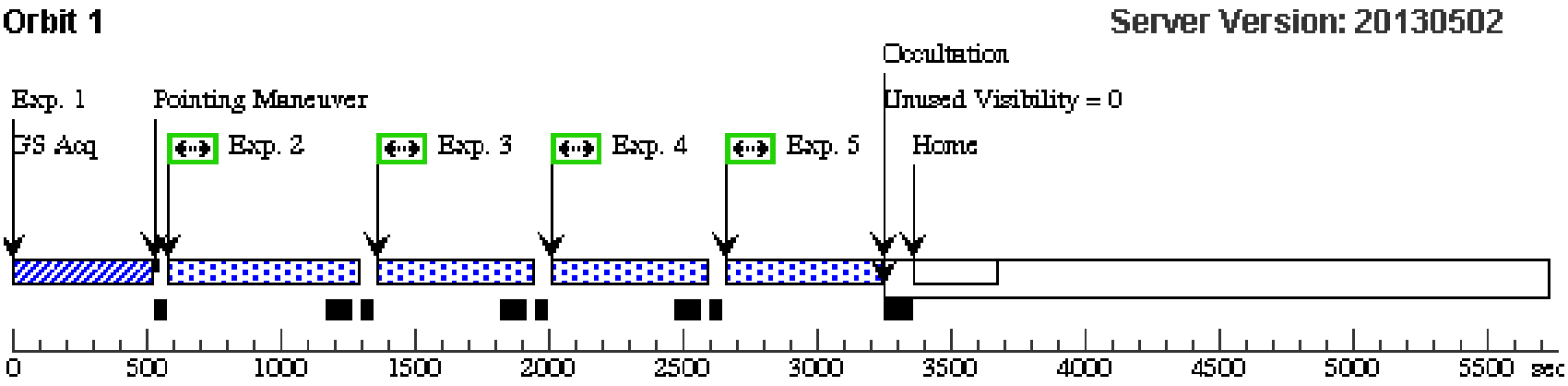
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(8)	J1544P2827	RA: 15 44 30.5200 (236.1271667d) Dec: +28 27 56.80 (28.46578d) Equinox: J2000	Epoch of Position: 2000.0 Redshift: 0.232	V=16.51+/-0.1 FUV magnitude=16.90	Reference Frame: ICRS

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Target-ACQ (ta.515214)	(8) J1544P2827	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				43 Secs (43 Secs) *[==>]*	*[1]*
Comments: Exposure time increased by 20% to allow for QSO variability									
2	FP-POS1 (sp.515685)	(8) J1544P2827	COS/FUV, TIME-TAG, PSA	G130M 1327 A	BUFFER-TIME=424; FP-POS=1; FLASH=YES; SEGMENT=BOTH			524 Secs (524 Secs) *[==>]*	*[1]*
3	FP-POS2 (sp.515685)	(8) J1544P2827	COS/FUV, TIME-TAG, PSA	G130M 1327 A	BUFFER-TIME=424; FP-POS=2; FLASH=YES; SEGMENT=BOTH			524 Secs (524 Secs) *[==>]*	*[1]*
4	FP-POS3 (sp.515685)	(8) J1544P2827	COS/FUV, TIME-TAG, PSA	G130M 1327 A	BUFFER-TIME=424; FP-POS=3; FLASH=YES; SEGMENT=BOTH			524 Secs (524 Secs) *[==>]*	*[1]*
5	FP-POS4 (sp.515685)	(8) J1544P2827	COS/FUV, TIME-TAG, PSA	G130M 1327 A	BUFFER-TIME=524; FP-POS=4; FLASH=YES; SEGMENT=BOTH			524 Secs (524 Secs) *[==>]*	*[1]*

Orbit Structure



Visit

Proposal 13423, J2236p1343 (09) Sun Jun 23 01:04:57 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(9)	J2236P1343	RA: 22 36 7.6800 (339.0320000d) Dec: +13 43 55.30 (13.73203d) Equinox: J2000	Epoch of Position: 2000.0 Redshift: 0.326	V=16.25+/-0.1 FUV magnitude=16.71	Reference Frame: ICRS

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Target-ACQ (ta.515220)	(9) J2236P1343	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				32 Secs (32 Secs) *[==>]*	***[1]***
Comments: Exposure time increased by 20% to allow for QSO variability									
2	FP-POS1 (sp.515686)	(9) J2236P1343	COS/FUV, TIME-TAG, PSA	G130M 1327 A	BUFFER-TIME=426; FP-POS=1; FLASH=YES; SEGMENT=BOTH			526 Secs (526 Secs) *[==>]*	***[1]***
3	FP-POS2 (sp.515686)	(9) J2236P1343	COS/FUV, TIME-TAG, PSA	G130M 1327 A	BUFFER-TIME=426; FP-POS=2; FLASH=YES; SEGMENT=BOTH			526 Secs (526 Secs) *[==>]*	***[1]***
4	FP-POS3 (sp.515686)	(9) J2236P1343	COS/FUV, TIME-TAG, PSA	G130M 1327 A	BUFFER-TIME=426; FP-POS=3; FLASH=YES; SEGMENT=BOTH			526 Secs (526 Secs) *[==>]*	***[1]***
5	FP-POS4 (sp.515686)	(9) J2236P1343	COS/FUV, TIME-TAG, PSA	G130M 1327 A	BUFFER-TIME=526; FP-POS=4; FLASH=YES; SEGMENT=BOTH			526 Secs (526 Secs) *[==>]*	***[1]***

Orbit Structure