11742 - Probing HeII Reionization with GALEX-selected Quasar Sightlines and HST/COS

Cycle: 17, Proposal Category: GO

(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) CTS0216	COS/FUV COS/NUV	2	17-Jun-2009 21:11:59.0	yes
02	(2) CSO0806	COS/FUV COS/NUV	2	17-Jun-2009 21:12:03.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
03	(3) PC0058+0215	COS/FUV COS/NUV	3	17-Jun-2009 21:12:07.0	yes
04	(4) SDSSJ0936+2927	COS/FUV COS/NUV	2	17-Jun-2009 21:12:11.0	yes
05	(5) SDSSJ0818+4908	COS/FUV COS/NUV	3	17-Jun-2009 21:12:14.0	yes
06	(6) SDSSJ0924+4852	COS/FUV COS/NUV	3	17-Jun-2009 21:12:19.0	yes
07	(7) SDSSJ1101+1053	COS/FUV COS/NUV	3	17-Jun-2009 21:12:23.0	yes
08	(8) SDSSJ1237+0126	COS/FUV COS/NUV	3	17-Jun-2009 21:12:27.0	yes

21 Total Orbits Used

ABSTRACT

We propose spectroscopic observations with COS of eight z~3 QSOs that we found to be bright in the far ultraviolet. Our aim is to study intergalactic absorption caused by the onset of the He II Lyman forest. Several lines of evidence suggest that helium reionization occurred at z~3. Understanding this process is critical for a complete picture of the intergalactic medium and its evolution; it also gives clues to hydrogen reionization at z>6. The only direct means of assessing He II reionization is through far-UV observations of the He II Lyman alpha forest. Only 6 sightlines are known to date where this is feasible, despite extensive surveys. Our programme is designed to double the number of available sightlines. To this effect, we cross-correlated all known z>2.73 quasars with UV source lists from the GALEX satellite. The selected quasars were all significantly detected in the far UV by GALEX, and their UV colors are similar to those of already known quasars with transparent sightlines. Spectra obtained with COS will allow us to compile the first comprehensive sample of He II absorption spectra probing similar redshifts, enabling a systematic investigation of the He II reionization epoch and the spectral shape of the UV background.

OBSERVING DESCRIPTION

We will take FUV spectra of 8 high-redshift quasars with COS in order to search for intergalactic HeII absorption. For each target we plan a single visit with 2-3 orbits. All spectroscopic observations use the low-resolution grating G140L in the 1105A setup to record the flux at the shortest wavelengths accessible to HST.

With GALEX photometry available for every target, we used the COS ETC to estimate the exposure times with the grating G140L in the 1105A setup. We adopted a flat FUV spectral energy distribution in f_lambda normalized to the GALEX FUV magnitude and chose average background conditions. We aim at a S/N=6-7 per resolution element which results in a request of 2 orbits each for the three targets at m_FUV<21 and 3 orbits each for the 5 targets at m_FUV>21. Thus, we arrive at a total of 21 orbits for the 8 targets.

Since all targets are faint, direct acquisition in the NUV is the only option. In the updated COS Instrument Handbook it was strongly suggested to perform an ACQ/SEARCH before object acquisition, even if the object coordinates are accurate. Thus, the acquisition times have been substantially revised compared to Phase I, where we had assumed acquisition only via ACQ/IMAGE. The targets will be acquired using a 2x2 ACQ/SEARCH, followed by an ACQ/IMAGE. The COS ETC was used to estimate the exposure time to reach S/N=40 in a direct NUV exposure. Target fluxes were calibrated to the GALEX NUV magnitudes. Two of our targets are very faint, so that almost the complete first orbit has to be spent on target acquisition. According to the COS Instrument Science Team, a lower S/N in the acquisition exposures is not recommended.

We adjusted the spectroscopic exposure times to use the full visibility period in each orbit. The expected S/N is well below the maximum S/N achievable without dithering around the central wavelength. Nevertheless, we use two FP-POS positions to correct for possible fixed pattern detector features. All spectra will be recorded in TIME-TAG mode with concurrent wavelength calibration (TAGFLASH).

ADDITIONAL COMMENTS

All proposed targets have reliable GALEX FUV fluxes well below the bright object limits of COS. We ran the COS BOT in APT, finding all objects near the targets to be safe except two, which are actually targets. Thus, all targets are safe to acquire.

Visit

Proposal 11742, Visit 01, implementation Thu Jun 18 01:12:30 GMT 2009

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

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

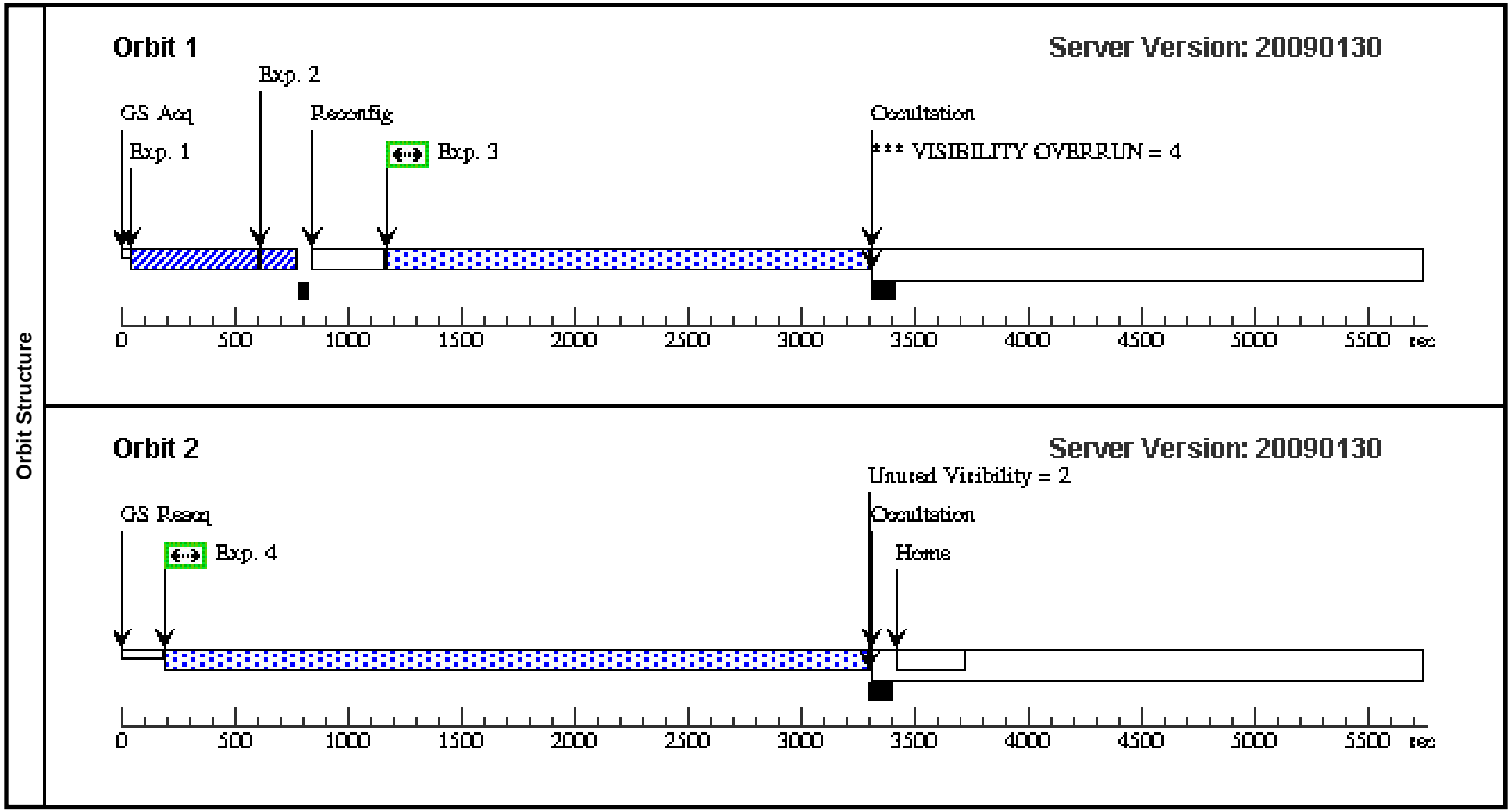
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	CTS0216	RA: 02 16 22.9940 (34.0958083d)	Redshift: 2.735	V=17.9+/-0.1	Reference Frame: ICRS
	Alt Name1: CTSB20.11	Dec: -39 07 55.76 (-39.13216d)		F(1539)=5.3+/-1.0E-16,	
	Alt Name2: GSC2S03301001519	Equinox: J2000		F(2316)=3.8+/-0.3E-16	

Comments: UV fluxes from GALEX data

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Search_2x2x30	(1) CTS0216	COS/NUV, ACQ/SEARCH, PSA	MIRRORA	CENTER=FLUX-WT; SCAN-SIZE=2; STEP-SIZE=1.767			30 Secs *[==>]*	*[1]*
2	Acquisition_2x30	(1) CTS0216	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				30 Secs *[==>]*	*[1]*
3	CTS0216_3	(1) CTS0216	COS/FUV, TIME-TAG, PSA	G140L 1105 A	SEGMENT=A; FP-POS=3; FLASH=YES; EXTENDED=NO; BUFFER-TIME=1956			1956 Secs *[==>1956.0 Secs]*	*[1]*
4	CTS0216_4	(1) CTS0216	COS/FUV, TIME-TAG, PSA	G140L 1105 A	SEGMENT=A; FP-POS=4; FLASH=YES; EXTENDED=NO; BUFFER-TIME=3049			3049 Secs *[==>3049.0 Secs]*	*[2]*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GS Acq
Reconfig
Occultation
Exp. 1
Exp. 3
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sec
Orbit 2
Server Version: 20090130
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GS Reacq
Occultation
Exp. 4
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3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11742, Visit 02, implementation Thu Jun 18 01:12:31 GMT 2009

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

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

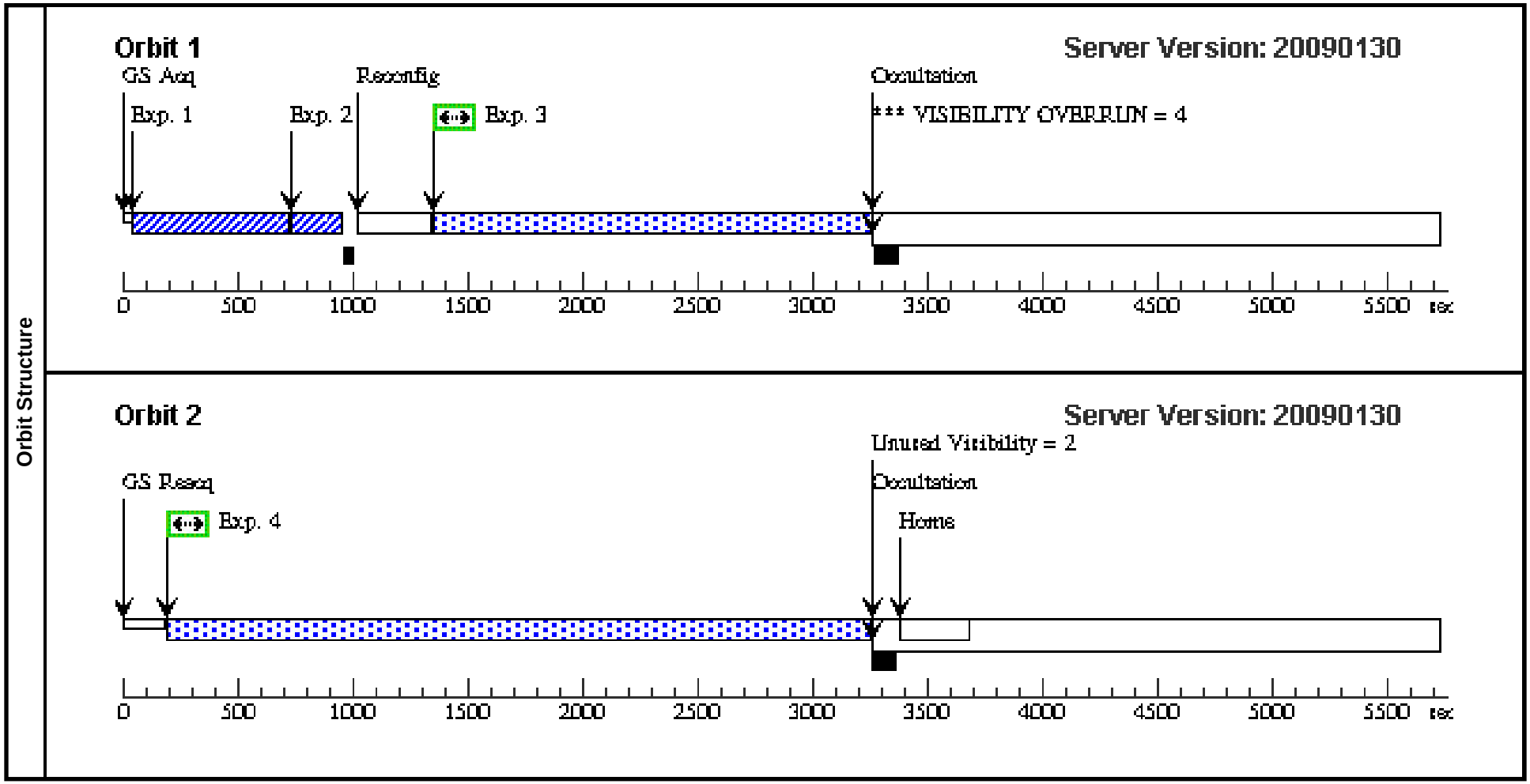
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	CSO0806	RA: 13 04 11.9900 (196.0499583d)	Redshift: 2.850	V=17.4+/-0.1	Reference Frame: ICRS
	Alt Name1: CSO806	Dec: +29 53 48.80 (29.89689d)		F(1539)=2.6+/-0.1E-16,	
	Alt Name2: GSC2N122211116333	Equinox: J2000		F(2316)=1.26+/-0.04E-16	

Comments: UV fluxes from GALEX data

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Search_2x2x60	(2) CSO0806	COS/NUV, ACQ/SEARCH, PSA	MIRRORA	CENTER=FLUX-WT; SCAN-SIZE=2; STEP-SIZE=1.767			60 Secs *[==>]*	***[1]***
2	Acquisition_2x60	(2) CSO0806	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				60 Secs *[==>]*	***[1]***
3	CSO0806_3	(2) CSO0806	COS/FUV, TIME-TAG, PSA	G140L 1105 A	SEGMENT=A; FLASH=YES; FP-POS=3; EXTENDED=NO; BUFFER-TIME=1733			1733 Secs *[==>1733.0 Secs]*	***[1]***
4	CSO0806_4	(2) CSO0806	COS/FUV, TIME-TAG, PSA	G140L 1105 A	SEGMENT=A; FLASH=YES; FP-POS=4; EXTENDED=NO; BUFFER-TIME=3006			3006 Secs *[==>3006.0 Secs]*	***[2]***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Reconfig
Occultation
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Exp. 2
Exp. 3
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Server Version: 20090130
Unused Visibility = 2
GS Reacq
Occultation
Exp. 4
Home
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3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11742, Visit 03, implementation Thu Jun 18 01:12:32 GMT 2009

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

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

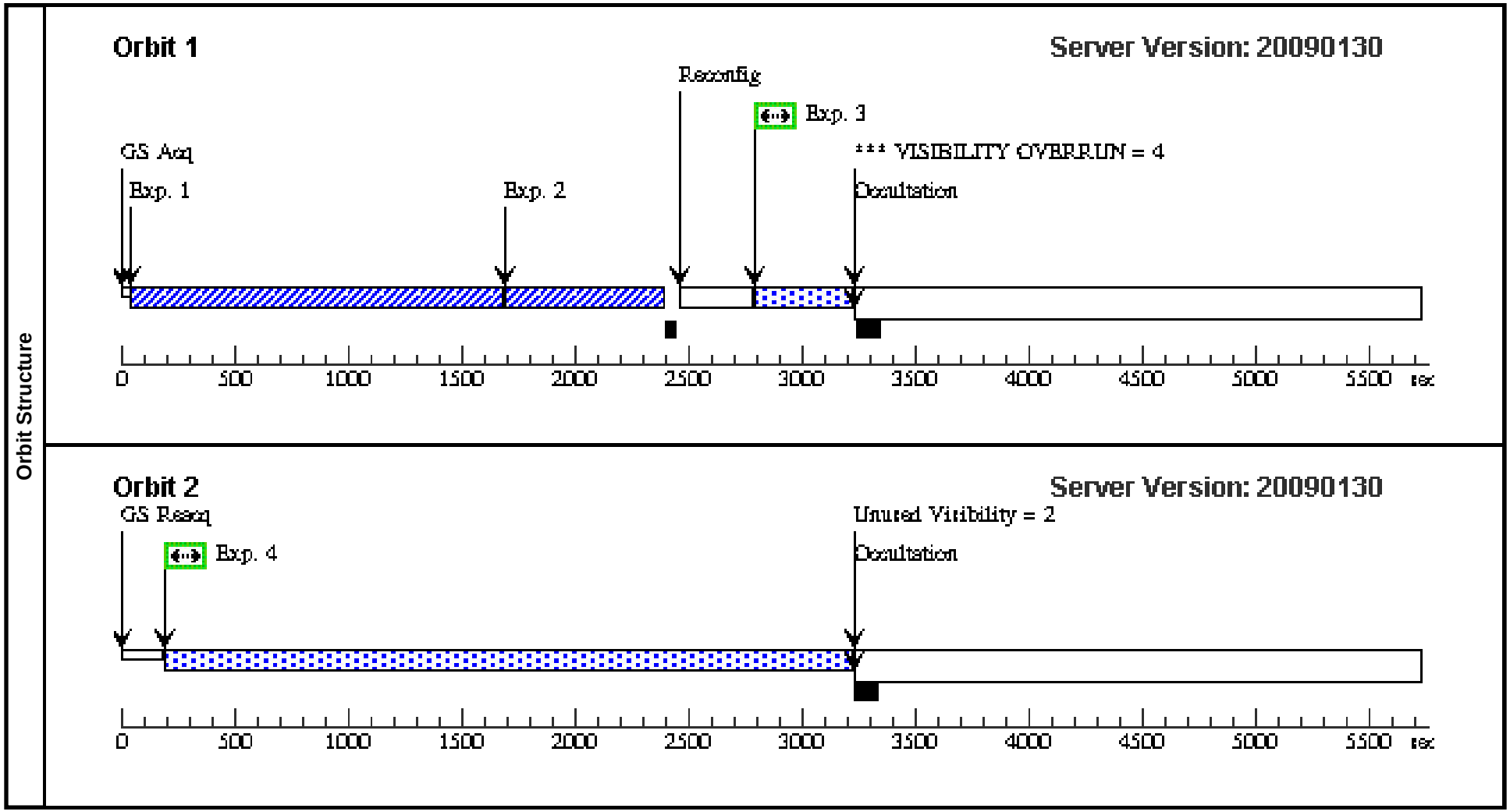
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	PC0058+0215	RA: 01 00 58.3950 (15.2433125d)	Redshift: 2.868	V=18.6+/-0.2	Reference Frame: ICRS
	Alt Name1: Q0058+0215	Dec: +02 31 30.53 (2.52515d)		F(1539)=1.3+/-0.4E-16,	
	Alt Name2: GSC2N32013123134	Equinox: J2000		F(2316)=2.3+/-1.7E-17	

Comments: UV fluxes from GALEX data

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Search_2x2x300	(3) PC0058+0215	COS/NUV, ACQ/SEARCH, PSA	MIRRORA	CENTER=FLUX-WT; SCAN-SIZE=2; STEP-SIZE=1.767			300 Secs *[==>]*	***[1]***
2	Acquisition_2x300	(3) PC0058+0215	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				300 Secs *[==>]*	***[1]***
3	PC0058+0215_3	(3) PC0058+0215	COS/FUV, TIME-TAG, PSA	G140L 1105 A	SEGMENT=A; FP-POS=3; FLASH=YES; EXTENDED=NO; BUFFER-TIME=262			262 Secs *[==>262.0 Secs]*	***[1]***
4	PC0058+0215_3	(3) PC0058+0215	COS/FUV, TIME-TAG, PSA	G140L 1105 A	SEGMENT=A; FP-POS=3; FLASH=YES; EXTENDED=NO; BUFFER-TIME=2975			2975 Secs *[==>2975.0 Secs]*	***[2]***
5	PC0058+0215_4	(3) PC0058+0215	COS/FUV, TIME-TAG, PSA	G140L 1105 A	SEGMENT=A; FP-POS=4; FLASH=YES; EXTENDED=NO; BUFFER-TIME=2975			2975 Secs *[==>2975.0 Secs]*	***[3]***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Reconfig
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GS Acq
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Exp. 1
Exp. 2
Occultation
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4500
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5500
sec
Orbit 2
Server Version: 20090130
GS Reacq
Unused Visibility = 2
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Occultation
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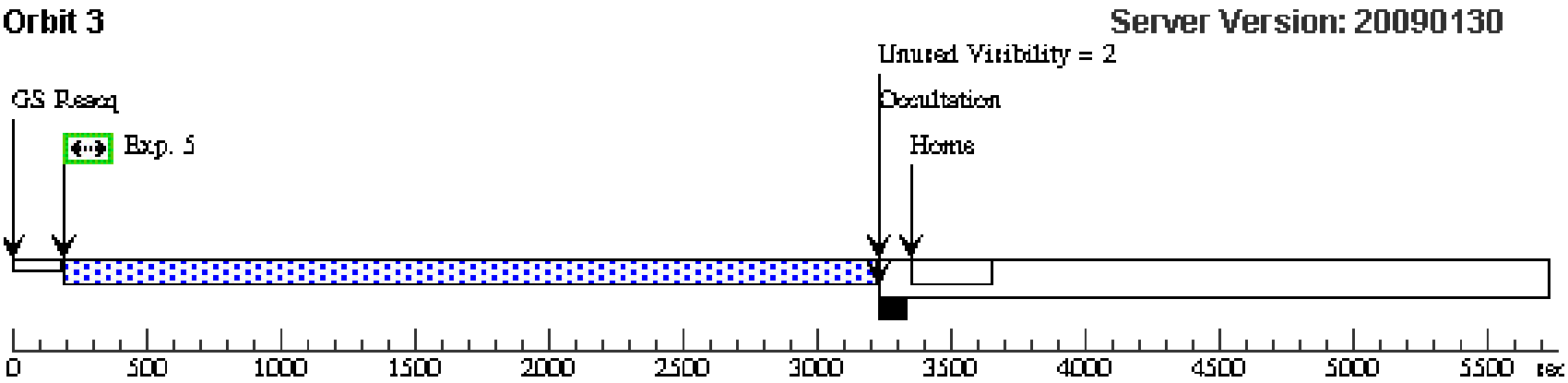
sec

Orbit Structure (continued)



Visit

Proposal 11742, Visit 04, implementation Thu Jun 18 01:12:32 GMT 2009

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

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

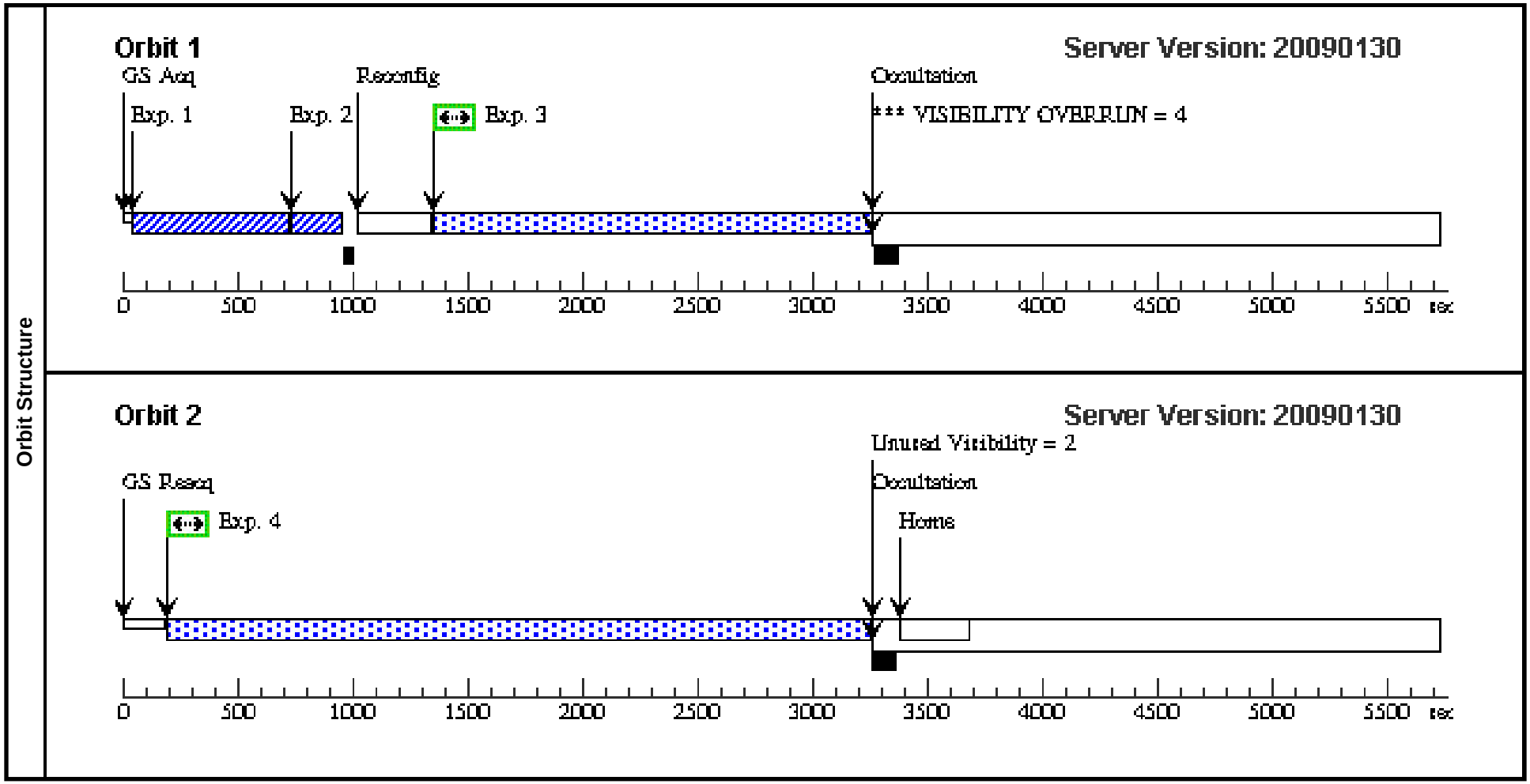
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	SDSSJ0936+2927 Alt Name1: GSC2N23303326088	RA: 09 36 43.5100 (144.1812917d) Dec: +29 27 13.60 (29.45378d) Equinox: J2000	Redshift: 2.925	V=18.0+/-0.1 F(1539)=2.1+/-0.6E-16, F(2316)=1.3+/-0.3E-16	Reference Frame: ICRS

Comments: UV fluxes from GALEX data

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Search_2x2x60	(4) SDSSJ0936+2927	COS/NUV, ACQ/SEARCH, PSA	MIRRORA	CENTER=FLUX-WT; SCAN-SIZE=2; STEP-SIZE=1.767			60 Secs *[==>]*	***[1]***
2	Acquisition_2x60	(4) SDSSJ0936+2927	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				60 Secs *[==>]*	***[1]***
3	SDSSJ0936+2927_3	(4) SDSSJ0936+2927	COS/FUV, TIME-TAG, PSA	G140L 1105 A	SEGMENT=A; FP-POS=3; FLASH=YES; EXTENDED=NO; BUFFER-TIME=1733			1733 Secs *[==>1733.0 Secs]*	***[1]***
4	SDSSJ0936+2927_4	(4) SDSSJ0936+2927	COS/FUV, TIME-TAG, PSA	G140L 1105 A	SEGMENT=A; FP-POS=4; FLASH=YES; EXTENDED=NO; BUFFER-TIME=3006			3006 Secs *[==>3006.0 Secs]*	***[2]***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Reconfig
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Exp. 2
Exp. 3
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sec
Orbit 2
Server Version: 20090130
Unused Visibility = 2
GS Reacq
Occultation
Exp. 4
Home
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5000
5500
sec

Visit

Proposal 11742, Visit 05, implementation Thu Jun 18 01:12:33 GMT 2009

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

(Visit 05) Warning (Orbit Planner): VISIBILITY OVERRUN

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(5)	SDSSJ0818+4908 Alt Name1: SDSSJ08188+4908 Alt Name2: GSC2N23023113004	RA: 08 18 50.0200 (124.7084167d) Dec: +49 08 17.20 (49.13811d) Equinox: J2000	Redshift: 2.954	V=18.5+/-0.1 F(1539)=1.3+/-0.1E-16, F(2316)=5.7+/-0.3E-17	Reference Frame: ICRS

Comments: UV fluxes from GALEX data

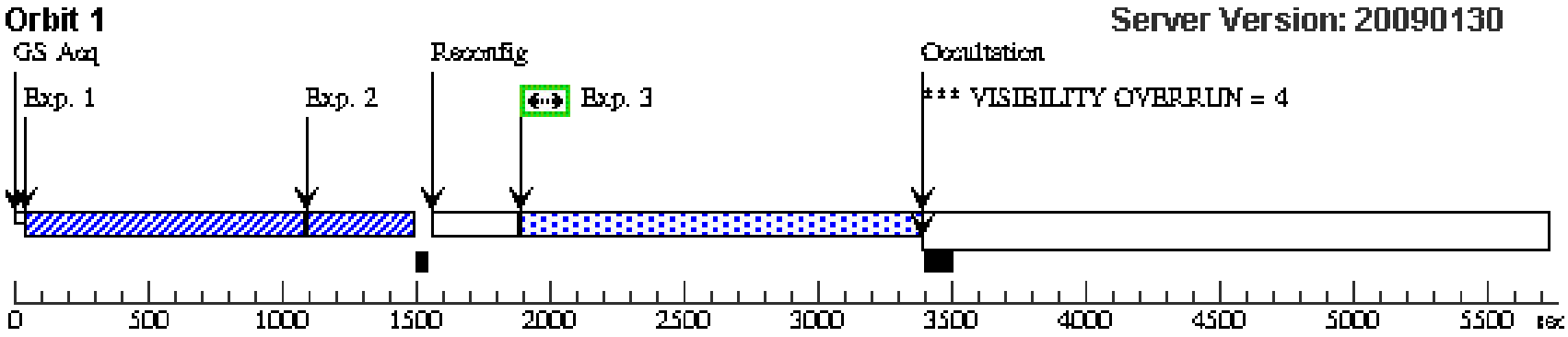
Exposures

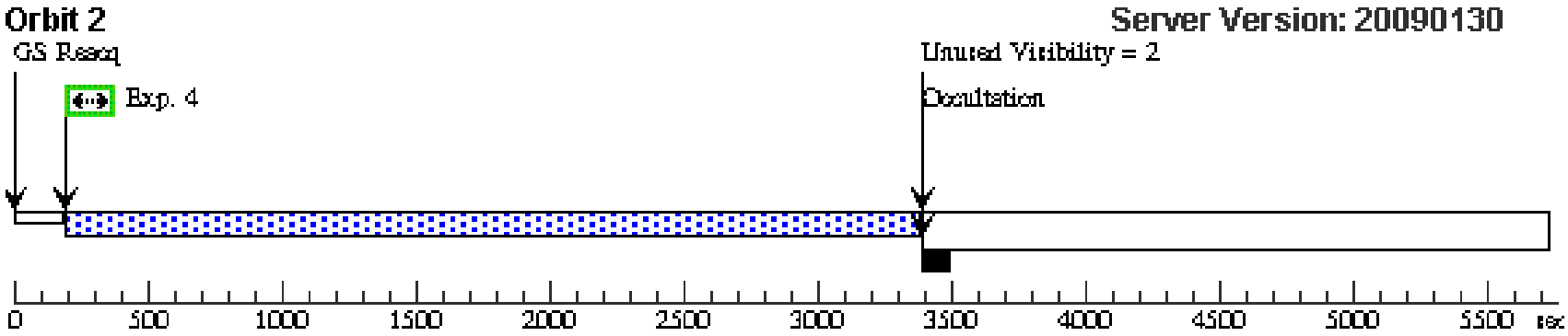
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Search_2x2x150	(5) SDSSJ0818+4908	COS/NUV, ACQ/SEARCH, PSA	MIRRORA	CENTER=FLUX-WT; SCAN-SIZE=2; STEP-SIZE=1.767			150 Secs *[==>]*	 ***[1]***
2	Acquisition_2x150	(5) SDSSJ0818+4908	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				150 Secs *[==>]*	 ***[1]***
3	SDSSJ0818+4908_3	(5) SDSSJ0818+4908	COS/FUV, TIME-TAG, PSA	G140L 1105 A	SEGMENT=A; FP-POS=3; FLASH=YES; EXTENDED=NO; BUFFER-TIME=1324			1324 Secs *[==>1324.0 Secs]*	 ***[1]***
4	SDSSJ0818+4908_3	(5) SDSSJ0818+4908	COS/FUV, TIME-TAG, PSA	G140L 1105 A	SEGMENT=A; FP-POS=3; FLASH=YES; EXTENDED=NO; BUFFER-TIME=3137			3137 Secs *[==>3137.0 Secs]*	 ***[2]***

Exposures (continued)

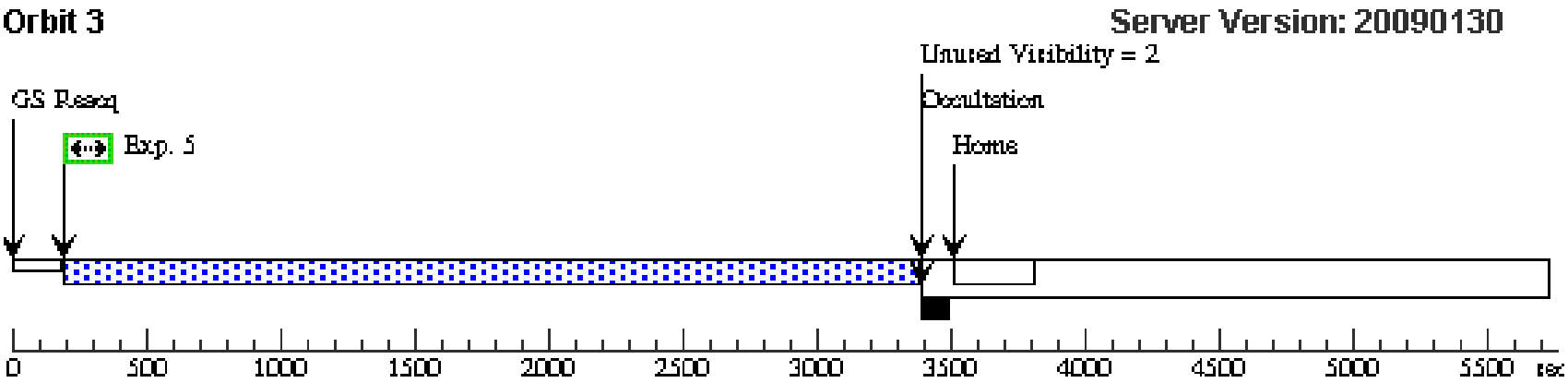
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
5	SDSSJ0818+4908_4	(5) SDSSJ0818+4908	COS/FUV, TIME-TAG, PSA	G140L 1105 A	SEGMENT=A; FP-POS=4; FLASH=YES; EXTENDED=NO; BUFFER-TIME=3137			3137 Secs *[==>3137.0 Secs]*	*[3]*

Orbit Structure





Orbit Structure (continued)



Visit

Proposal 11742, Visit 06, implementation Thu Jun 18 01:12:34 GMT 2009

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

(Visit 06) Warning (Orbit Planner): VISIBILITY OVERRUN

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(6)	SDSSJ0924+4852 Alt Name1: SDSSJ09247+4852 Alt Name2: GSC2N23210107803	RA: 09 24 47.3600 (141.1973333d) Dec: +48 52 42.80 (48.87856d) Equinox: J2000	Redshift: 3.025	V=18.4+/-0.1 F(1539)=1.2+/-0.3E-16, F(2316)=6.8+/-1.7E-17	Reference Frame: ICRS

Comments: UV fluxes from GALEX data

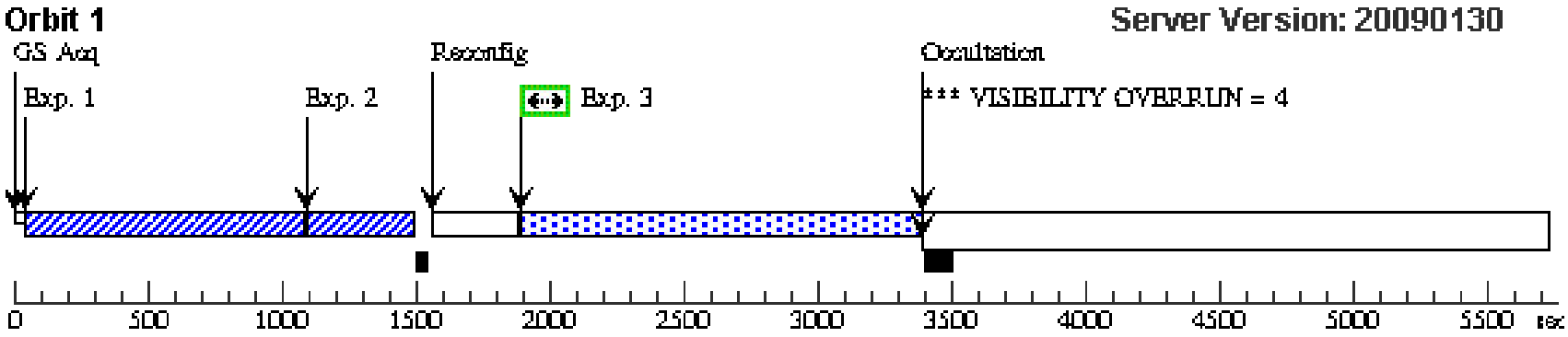
Exposures

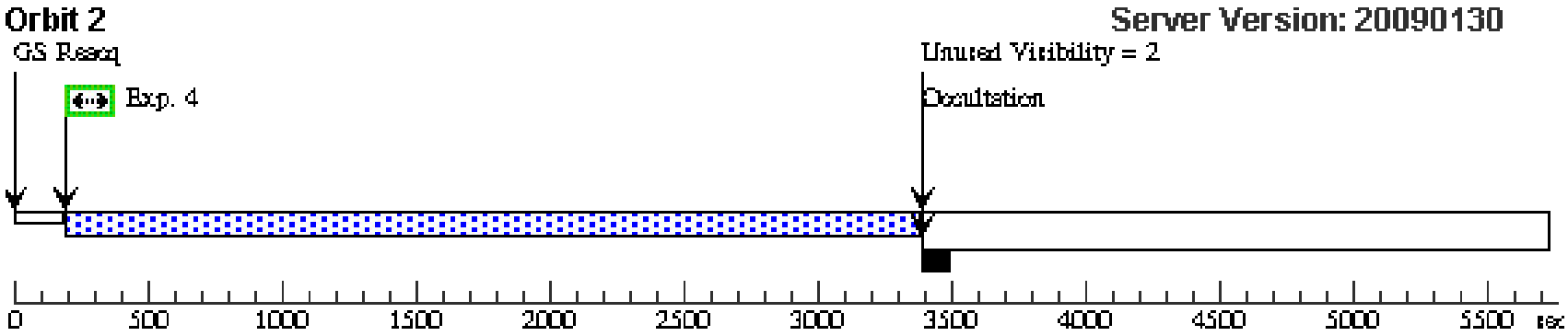
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Search_2x2x150	(6) SDSSJ0924+4852	COS/NUV, ACQ/SEARCH, PSA	MIRRORA	CENTER=FLUX-WT; SCAN-SIZE=2; STEP-SIZE=1.767			150 Secs *[==>]*	 ***[1]***
2	Acquisition_2x150	(6) SDSSJ0924+4852	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				150 Secs *[==>]*	 ***[1]***
3	SDSSJ0924+4852_3	(6) SDSSJ0924+4852	COS/FUV, TIME-TAG, PSA	G140L 1105 A	SEGMENT=A; FP-POS=3; FLASH=YES; EXTENDED=NO; BUFFER-TIME=1324			1324 Secs *[==>1324.0 Secs]*	 ***[1]***
4	SDSSJ0924+4852_3	(6) SDSSJ0924+4852	COS/FUV, TIME-TAG, PSA	G140L 1105 A	SEGMENT=A; FP-POS=3; FLASH=YES; EXTENDED=NO; BUFFER-TIME=3137			3137 Secs *[==>3137.0 Secs]*	 ***[2]***

Exposures (continued)

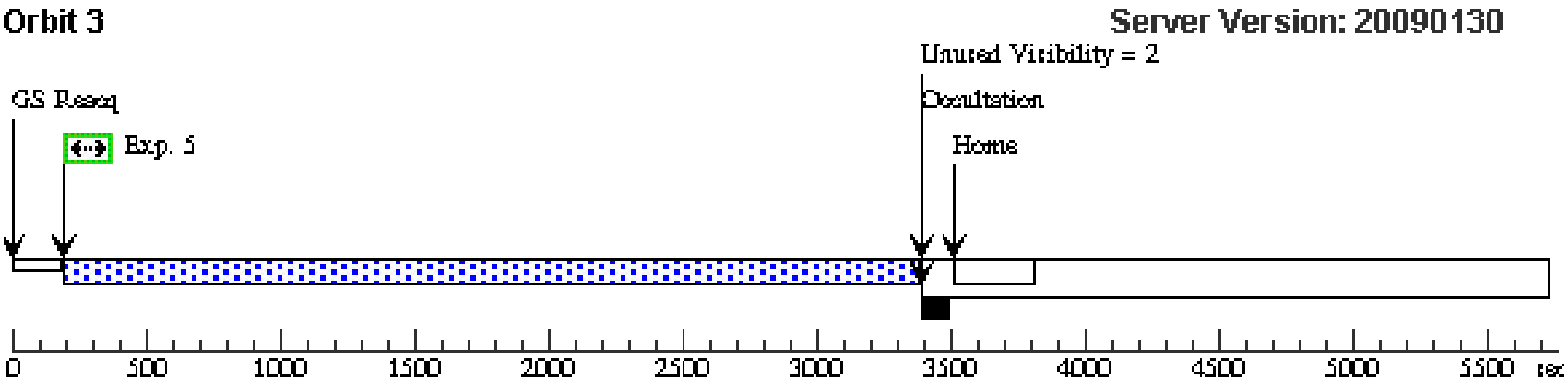
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
5	SDSSJ0924+4852_4	(6) SDSSJ0924+4852	COS/FUV, TIME-TAG, PSA	G140L 1105 A	SEGMENT=A; FP-POS=4; FLASH=YES; EXTENDED=NO; BUFFER-TIME=3137			3137 Secs *[==>3137.0 Secs]*	*[3]*

Orbit Structure





Orbit Structure (continued)



Visit

Proposal 11742, Visit 07, implementation Thu Jun 18 01:12:34 GMT 2009

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

(Visit 07) Warning (Orbit Planner): VISIBILITY OVERRUN

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(7)	SDSSJ1101+1053 Alt Name1: SDSSJ11019+1053 Alt Name2: GSC2N20311011627	RA: 11 01 55.7400 (165.4822500d) Dec: +10 53 2.30 (10.88397d) Equinox: J2000	Redshift: 3.030	V=18.8+/-0.1 F(1539)=1.5+/-0.4E-16, F(2316)=5.4+/-1.6E-17	Reference Frame: ICRS

Comments: UV fluxes from GALEX data

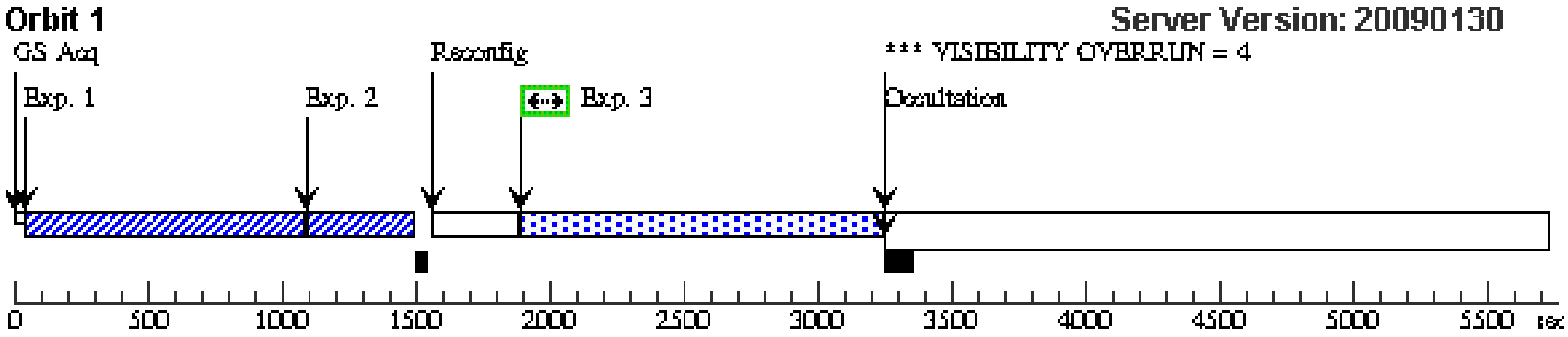
Exposures

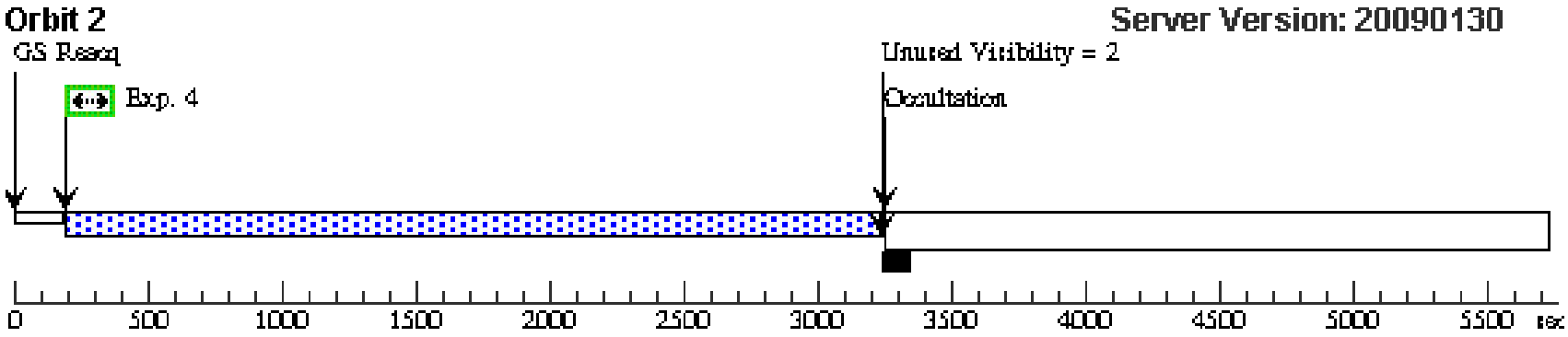
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Search_2x2x150	(7) SDSSJ1101+1053	COS/NUV, ACQ/SEARCH, PSA	MIRRORA	CENTER=FLUX-WT; SCAN-SIZE=2; STEP-SIZE=1.767			150 Secs *[==>]*	 ***[1]***
2	Acquisition_2x150	(7) SDSSJ1101+1053	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				150 Secs *[==>]*	 ***[1]***
3	SDSSJ1101+1053_3	(7) SDSSJ1101+1053	COS/FUV, TIME-TAG, PSA	G140L 1105 A	SEGMENT=A; FP-POS=3; FLASH=YES; EXTENDED=NO; BUFFER-TIME=1177			1177 Secs *[==>1177.0 Secs]*	 ***[1]***
4	SDSSJ1101+1053_3	(7) SDSSJ1101+1053	COS/FUV, TIME-TAG, PSA	G140L 1105 A	SEGMENT=A; FP-POS=3; FLASH=YES; EXTENDED=NO; BUFFER-TIME=2990			2990 Secs *[==>2990.0 Secs]*	 ***[2]***

Exposures (continued)

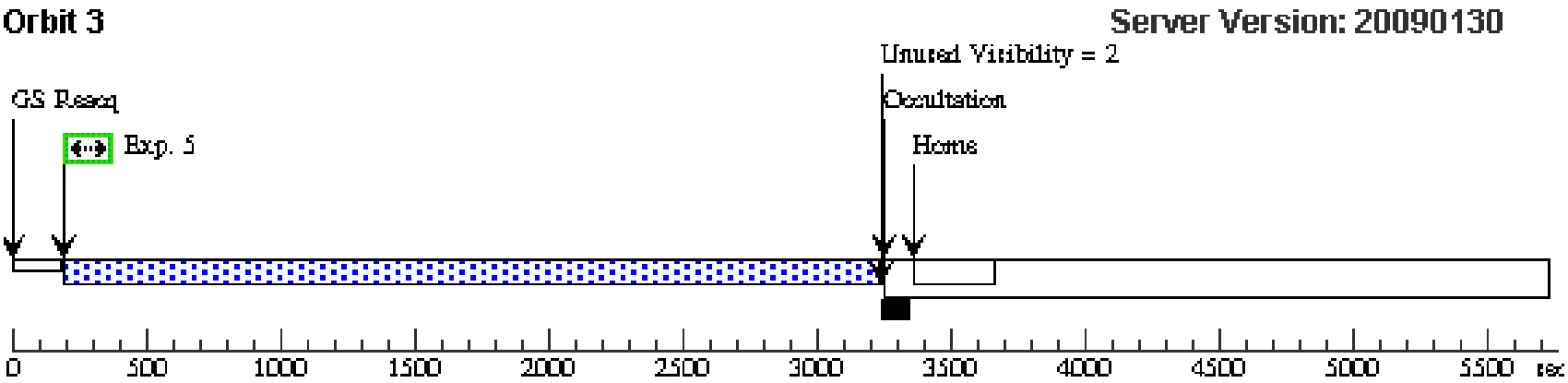
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
5	SDSSJ1101+1053_4	(7) SDSSJ1101+1053	COS/FUV, TIME-TAG, PSA	G140L 1105 A	SEGMENT=A; FP-POS=4; FLASH=YES; EXTENDED=NO; BUFFER-TIME=2990			2990 Secs *[==>2990.0 Secs]*	*[3]*

Orbit Structure





Orbit Structure (continued)



Visit

Proposal 11742, Visit 08, implementation Thu Jun 18 01:12:35 GMT 2009

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

(Visit 08) Warning (Orbit Planner): VISIBILITY OVERRUN

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(8)	SDSSJ1237+0126 Alt Name1: SDSSJ12378+0126 Alt Name2: GSC2N12001016551	RA: 12 37 48.9900 (189.4541250d) Dec: +01 26 6.90 (1.43525d) Equinox: J2000	Redshift: 3.144	V=18.8+/-0.1 F(1539)=1.3+/-0.4E-16, F(2316)=3.2+/-1.7E-17	Reference Frame: ICRS

Comments: UV fluxes from GALEX data

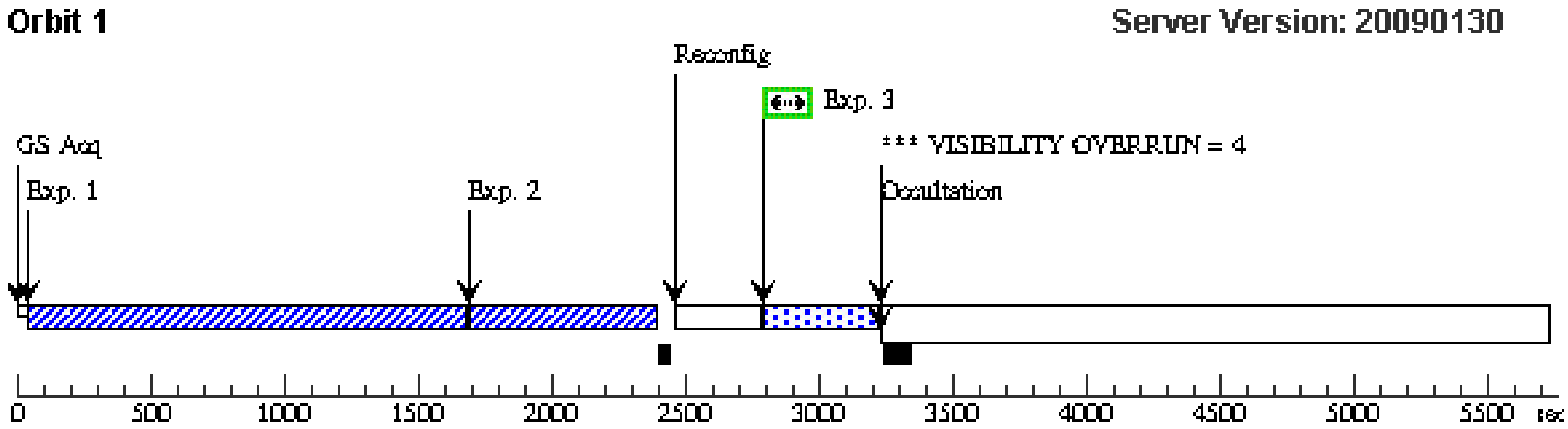
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Search_2x2x300	(8) SDSSJ1237+0126	COS/NUV, ACQ/SEARCH, PSA	MIRRORA	CENTER=FLUX-WT; SCAN-SIZE=2; STEP-SIZE=1.767			300 Secs *[==>]*	 ***[1]***
2	Acquisition_2x300	(8) SDSSJ1237+0126	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				300 Secs *[==>]*	 ***[1]***
3	SDSSJ1237+0126_3	(8) SDSSJ1237+0126	COS/FUV, TIME-TAG, PSA	G140L 1105 A	SEGMENT=A; FP-POS=3; FLASH=YES; EXTENDED=NO; BUFFER-TIME=262			262 Secs *[==>262.0 Secs]*	 ***[1]***
4	SDSSJ1237+0126_3	(8) SDSSJ1237+0126	COS/FUV, TIME-TAG, PSA	G140L 1105 A	SEGMENT=A; FP-POS=3; FLASH=YES; EXTENDED=NO; BUFFER-TIME=2975			2975 Secs *[==>2975.0 Secs]*	 ***[2]***

Exposures (continued)

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
5	SDSSJ1237+0126_4	(8) SDSSJ1237+0126	COS/FUV, TIME-TAG, PSA	G140L 1105 A	SEGMENT=A; FP-POS=4; FLASH=YES; EXTENDED=NO; BUFFER-TIME=2975			2975 Secs *[==>2975.0 Secs]*	*[3]*

Orbit Structure



Orbit Structure (continued)