12178 - Spanning the Reionization History of IGM Helium: a Highly Efficient Spectral Survey of the Far-UV-Brightest Quasars

Cycle: 18, 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) SDSSJ0054+0028	COS/FUV COS/NUV	1	18-Mar-2011 21:13:28.0	yes
02	(2) SDSSJ0855+2932	COS/FUV COS/NUV	1	18-Mar-2011 21:13:33.0	yes
03	(3) SDSSJ0856+1234	COS/FUV COS/NUV	1	18-Mar-2011 21:13:36.0	yes
04	(4) SDSSJ0915+4756	COS/FUV COS/NUV	2	18-Mar-2011 21:13:40.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
05	(5) SDSSJ0947+1421	COS/FUV COS/NUV	1	18-Mar-2011 21:13:44.0	yes
06	(6) SDSSJ0955+4322	COS/FUV COS/NUV	1	18-Mar-2011 21:13:47.0	yes
07	(7) SDSSJ1025+0452	COS/FUV COS/NUV	1	18-Mar-2011 21:13:50.0	yes
08	(8) HS1024+1849	COS/FUV COS/NUV	1	18-Mar-2011 21:13:53.0	yes
09	(9) Q1215+1202	COS/FUV COS/NUV	1	18-Mar-2011 21:13:56.0	yes
59	(9) Q1215+1202	COS/FUV COS/NUV	1	18-Mar-2011 21:13:58.0	yes
10	(10) Q1216+1656	COS/FUV COS/NUV	1	18-Mar-2011 21:14:01.0	yes
11	(11) SDSSJ1244+6201	COS/FUV COS/NUV	1	18-Mar-2011 21:14:04.0	yes
12	(12) SDSSJ1443+3546	COS/FUV COS/NUV	1	18-Mar-2011 21:14:09.0	yes
13	(13) SDSSJ1508+1654	COS/FUV COS/NUV	1	18-Mar-2011 21:14:11.0	yes
14	(14) 4C57.27	COS/FUV COS/NUV	1	18-Mar-2011 21:14:14.0	yes
15	(15) SDSSJ1604+1645	COS/FUV COS/NUV	1	18-Mar-2011 21:14:17.0	yes
16	(16) SDSSJ2257+0016	COS/FUV COS/NUV	2	18-Mar-2011 21:14:20.0	yes
17	(17) SDSSJ2345+1512	COS/FUV COS/NUV	2	18-Mar-2011 21:14:23.0	yes

21 Total Orbits Used

ABSTRACT

The reionization of IGM helium likely occurred at redshifts of z=3 to 4. Detailed studies of HeII Ly-alpha absorption toward a handful of quasars at 2.7<z<3.3 confirm the potential of such IGM probes, but the small sample and redshift range limited confidence in cosmological inferences. The requisite unobscured sightlines to high redshift are extremely rare; but we've cross-correlated 10,000 z>2.8 SDSS DR7 (and other) quasars with GALEX GR4/5, to identify 630 candidates potentially useful for HST HeII studies. Our cycle 15-16 HST trials confirm our approach, verifying twenty new HeII quasars at unprecedented 40% efficiency. We propose to complete the first efficient (80% with refinements) survey for HeII quasars, via reconnaissance (~1 orbit) COS spectra of a highly select subset of 17 SDSS/GALEX quasars at 2.7<z<3.8. Along with past work, this program will yield 3-4 of the brightest far-UV HeII sightlines within each of 10-12 redshift bins spanning 2.7<z<3.8, enabling a community sample suitable for detailed spectral follow-up with HST. Herein, we will also directly obtain quality UV spectral stacks within each redshift bin to trace the reionization history of IGM helium; such spectral stacks average over cosmic variance and individual object pathology. Our high-yield HeII sightline sample and spectral stacks will enable confident conclusions about the IGM baryon density, the spectrum and evolution of the ionizing background, the evolution of HeII opacity, and the epoch of helium reionization.

OBSERVING DESCRIPTION

We will obtain COS G140L FUV spectra of 17 z>2.8 quasars, filling 20 orbits in a high-efficiency search for new He II Gunn-Peterson trough sightlines. Our targets come from cross-matching known quasars with the GALEX UV catalogs, and our prior experience indicates ~80% of our targets will be clean He II sightlines. Target acquisition times and bright object safety concerns are directly addressed with the GALEX fluxes. Most targets will take one-orbit observations, with three targets using two orbits.

All our targets, even those that lack SDSS spectra, have very precise positions from SDSS imaging. Following COS ISR 2010-14, we therefore do not use ACQ/SEARCH for any targets, and use only ACQ/IMAGE for all targets. (We use S/N=40 in all cases except one quasar that is NUV-faint, in which case we use S/N=35. This quasar does not need a second orbit because it is FUV-bright.) In nearly all cases we use the 1105 center wavelength of G140L, to maximize coverage of each quasar's emission, proximity zone, and Gunn-Peterson trough. In one case we use the 1280 wave center for one orbit, to access the Lyman-beta trough of this uniquely bright and high-redshift object (we are limited at short wavelength only by instrument sensitivity). In this case we use FP-POS 1 and 4 to minimize the gap between segments. For all 1105 observations we use at least FP-POS 3 and 4; we will be obtaining moderate S/N spectra, and so two FP-POS values will be sufficient. We use the defaults for SEGMENT and

FLASH on all observations.

Visit

Proposal 12178, Visit 01, completed Sat Mar 19 01:14:28 GMT 2011

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

(Visit 01) Warning (Form): If the target coordinates are not known to 0.4" (or better) an ACQ/SEARCH should precede the ACQ/IMAGE.

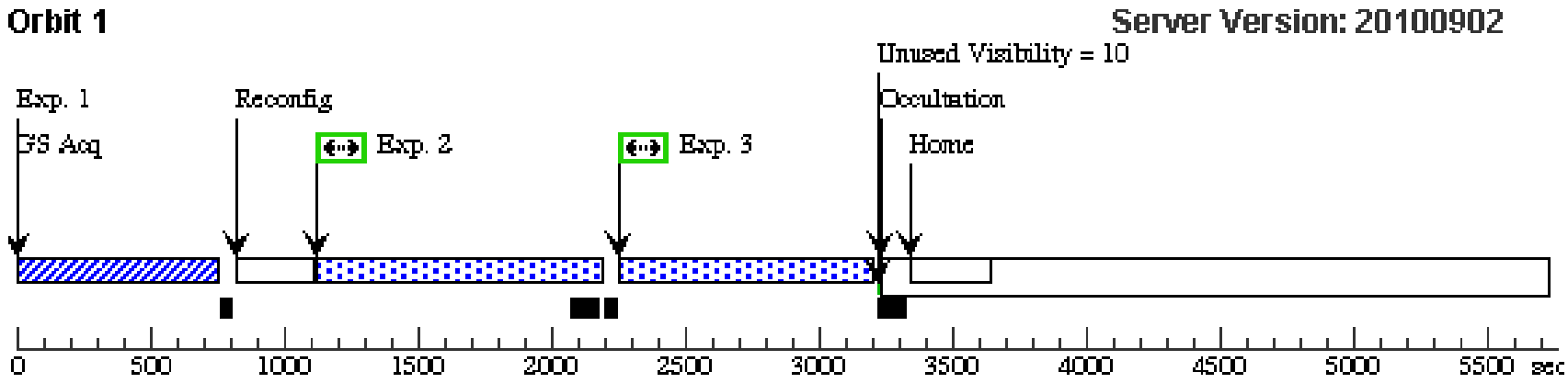
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	SDSSJ0054+0028	RA: 00 54 1.4815 (13.5061729d) Dec: +00 28 47.79 (.47994d) Equinox: J2000	Redshift: 3.41	V=19.9 GALEX: NUV=4.4e-17, FUV=6.2e-17; SDSS: u=24.21, g=20.53, r=19.91, i=19.89, z=19.76	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	TARG-ACQ	(1) SDSSJ0054+0028	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				179 Secs *[==>]*	*[1]*
Comments: Multiple NUV observations available; the faintest was used for target acquisition times, the brightest for bright object protection.									
2		(1) SDSSJ0054+0028	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=3; BUFFER-TIME=798			898 Secs *[==>898.0 Secs]*	*[1]*
3		(1) SDSSJ0054+0028	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=4; BUFFER-TIME=898			898 Secs *[==>898.0 Secs]*	*[1]*
Comments: Exposure time can be adjusted as needed to fill orbit.									

Orbit Structure



Visit

Proposal 12178, Visit 02, completed Sat Mar 19 01:14:29 GMT 2011

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

(Visit 02) Warning (Form): If the target coordinates are not known to 0.4" (or better) an ACQ/SEARCH should precede the ACQ/IMAGE.

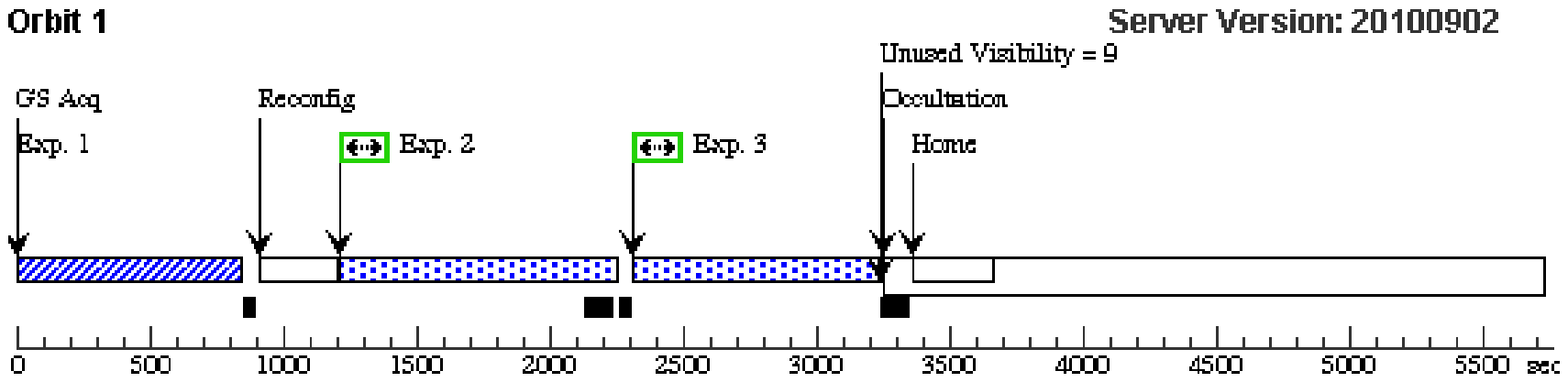
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	SDSSJ0855+2932	RA: 08 55 3.8112 (133.7658800d) Dec: +29 32 48.94 (29.54693d) Equinox: J2000	Redshift: 3.39	V=19.1 GALEX: NUV=6.2e-17, FUV=8.5e-17; SDSS: u=22.50, g=19.53, r=19.09, i=18.99, z=18.89	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	TARG-ACQ	(2) SDSSJ0855+2932	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				225 Secs *[==>]*	*[1]*
Comments: Only one epoch of UV observations available; 0.5x flux was used for target acquisition time, 2.5x flux was used for bright object protection.									
2		(2) SDSSJ0855+2932	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=3; BUFFER-TIME=764			864 Secs *[==>864.0 Secs]*	*[1]*
3		(2) SDSSJ0855+2932	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=4; BUFFER-TIME=864			864 Secs *[==>864.0 Secs]*	*[1]*
Comments: Exposure time can be adjusted as needed to fill orbit.									

Orbit Structure



Visit

Proposal 12178, Visit 03, completed Sat Mar 19 01:14:30 GMT 2011

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

(Visit 03) Warning (Form): If the target coordinates are not known to 0.4" (or better) an ACQ/SEARCH should precede the ACQ/IMAGE.

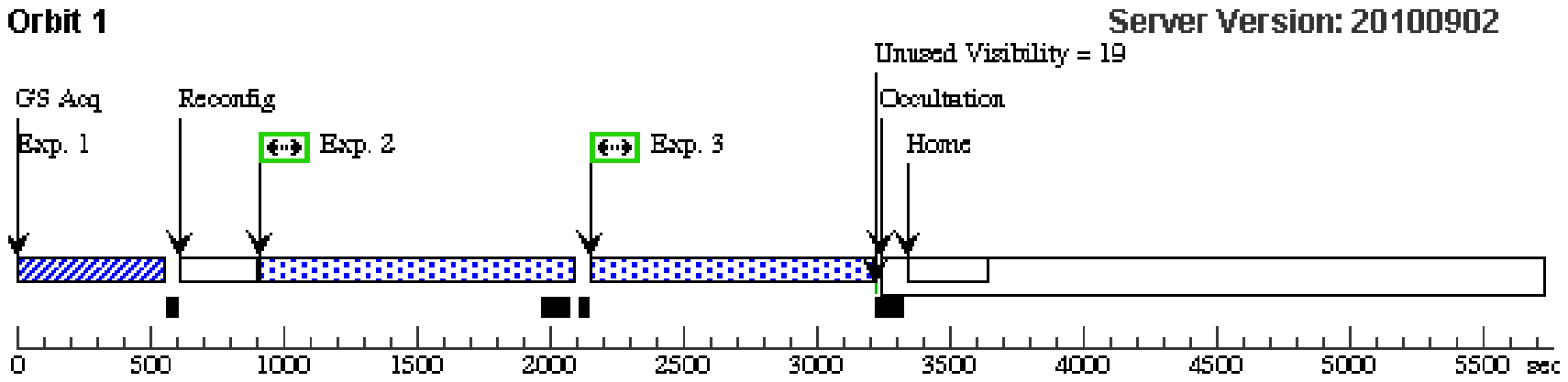
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	SDSSJ0856+1234	RA: 08 56 33.5739 (134.1398912d) Dec: +12 34 28.52 (12.57459d) Equinox: J2000	Redshift: 3.19	V=18.7 GALEX: NUV=10.17e-17, FUV=8.83e-17; SDSS: u=20.63, g=18.98, r=18.69, i=18.60, z=18.53	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	TARG-ACQ	(3) SDSSJ0856+1234	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				77 Secs *[==>]*	*[1]*
Comments: Multiple NUV observations available; the faintest was used for target acquisition times, the brightest for bright object protection.									
2		(3) SDSSJ0856+1234	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=3; BUFFER-TIME=906			1006 Secs *[==>1006.0 Secs]*	*[1]*
3		(3) SDSSJ0856+1234	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=4; BUFFER-TIME=1006			1006 Secs *[==>1006.0 Secs]*	*[1]*
Comments: Exposure time can be adjusted as needed to fill orbit.									

Orbit Structure



Visit

Proposal 12178, Visit 04, completed Sat Mar 19 01:14:30 GMT 2011

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

(Visit 04) Warning (Form): If the target coordinates are not known to 0.4" (or better) an ACQ/SEARCH should precede the ACQ/IMAGE.

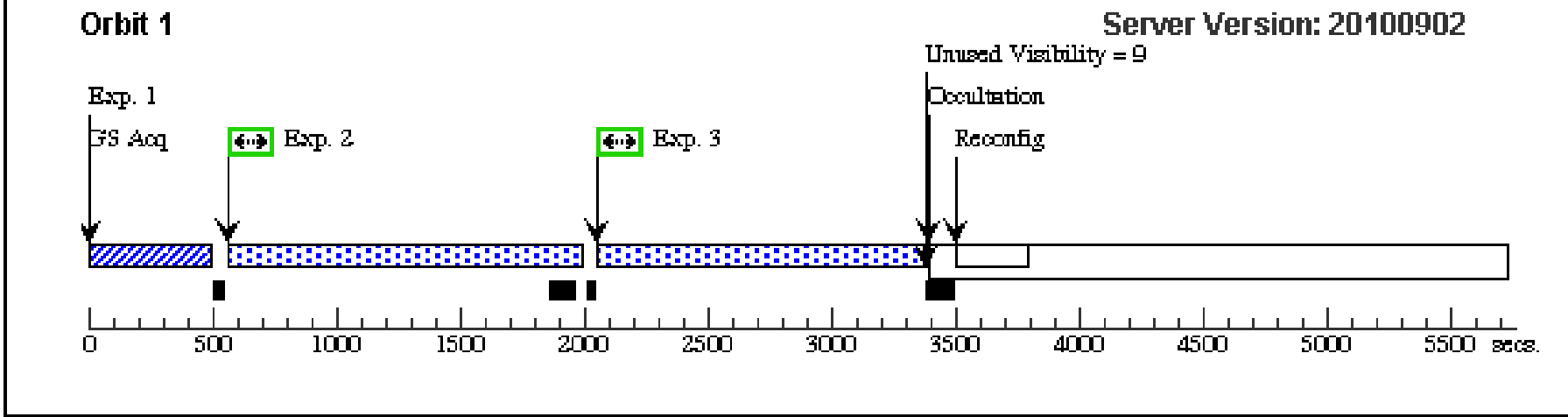
Fixed Targets

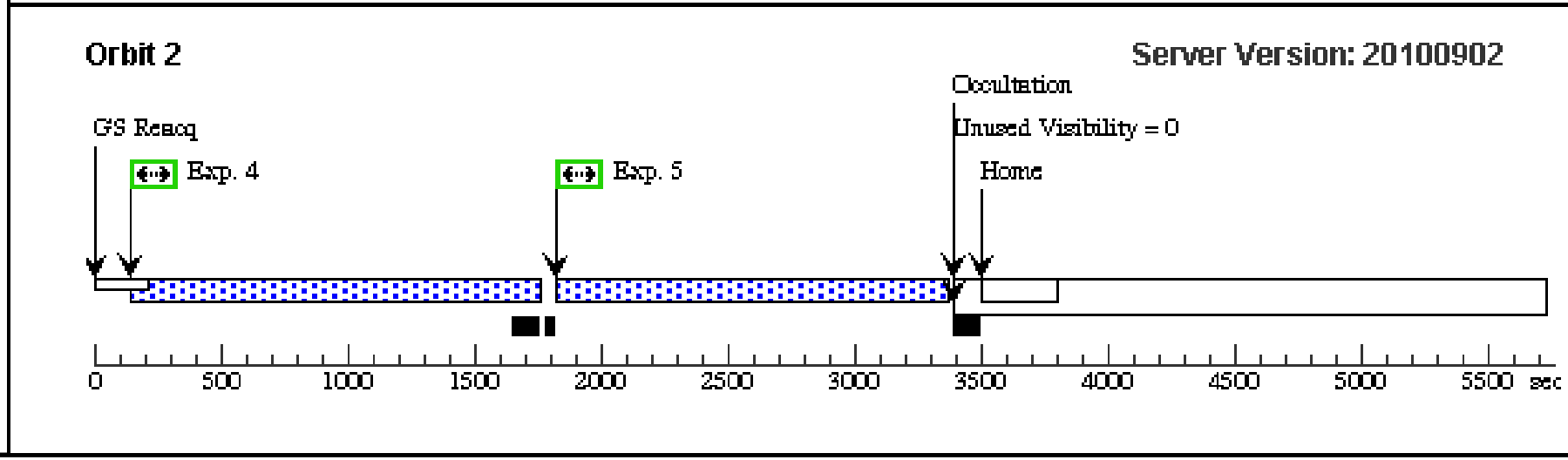
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	SDSSJ0915+4756	RA: 09 15 10.0104 (138.7917100d) Dec: +47 56 58.83 (47.94968d) Equinox: J2000	Redshift: 3.34	V=17.9 GALEX: NUV=16.1e-17, FUV=28.4e-17; SDSS: u=19.56, g=18.16, r=17.85, i=17.81, z=17.73	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	TARG-ACQ	(4) SDSSJ0915+4756	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				49 Secs *[==>]*	*[1]*
Comments: Multiple NUV observations available; the faintest was used for target acquisition times, the brightest for bright object protection.									
2		(4) SDSSJ0915+4756	COS/FUV, TIME-TAG, PSA	G140L 1280 A	FP-POS=1; BUFFER-TIME=1152; SEGMENT=BOTH			1252 Secs *[==>1262.0 Secs]*	*[1]*
3		(4) SDSSJ0915+4756	COS/FUV, TIME-TAG, PSA	G140L 1280 A	FP-POS=4; BUFFER-TIME=1252; SEGMENT=BOTH			1252 Secs *[==>1262.0 Secs]*	*[1]*
Comments: Exposure time can be adjusted as needed to fill orbit.									
4		(4) SDSSJ0915+4756	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=3; BUFFER-TIME=1398			1498 Secs *[==>1498.0 Secs]*	*[2]*
5		(4) SDSSJ0915+4756	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=4; BUFFER-TIME=1498			1498 Secs *[==>1498.0 Secs]*	*[2]*
Comments: Exposure time can be adjusted as needed to fill orbit.									

Orbit Structure





Visit

Proposal 12178, Visit 05, scheduling Sat Mar 19 01:14:31 GMT 2011

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

(Visit 05) Warning (Form): If the target coordinates are not known to 0.4" (or better) an ACQ/SEARCH should precede the ACQ/IMAGE.

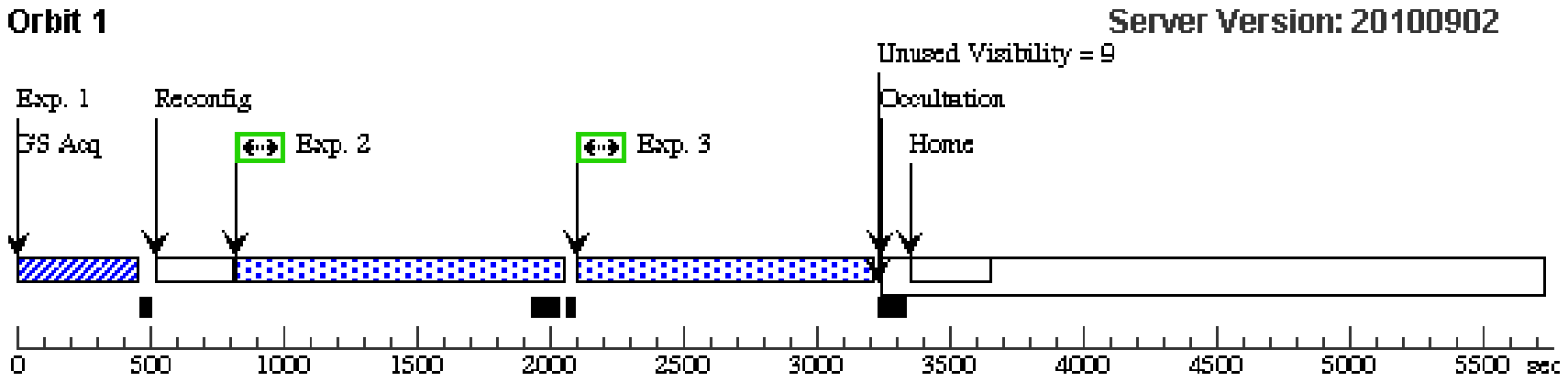
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(5)	SDSSJ0947+1421	RA: 09 47 34.2024 (146.8925100d) Dec: +14 21 16.99 (14.35472d) Equinox: J2000	Redshift: 3.03	V=17.2 GALEX: NUV=28.1e-17, FUV=24.7e-17; SDSS: u=18.69, g=17.42, r=17.23, i=17.02, z=16.92	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	TARG-ACQ	(5) SDSSJ0947+1421	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				30 Secs *[==>]*	*[1]*
Comments: Multiple NUV observations available; the faintest was used for target acquisition times, the brightest for bright object protection.									
2		(5) SDSSJ0947+1421	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=3; BUFFER-TIME=958			1058 Secs *[==>1058.0 Secs]*	*[1]*
3		(5) SDSSJ0947+1421	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=4; BUFFER-TIME=1058			1058 Secs *[==>1058.0 Secs]*	*[1]*
Comments: Exposure time can be adjusted as needed to fill orbit.									

Orbit Structure



Visit

Proposal 12178, Visit 06, completed Sat Mar 19 01:14:31 GMT 2011

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

(Visit 06) Warning (Form): If the target coordinates are not known to 0.4" (or better) an ACQ/SEARCH should precede the ACQ/IMAGE.

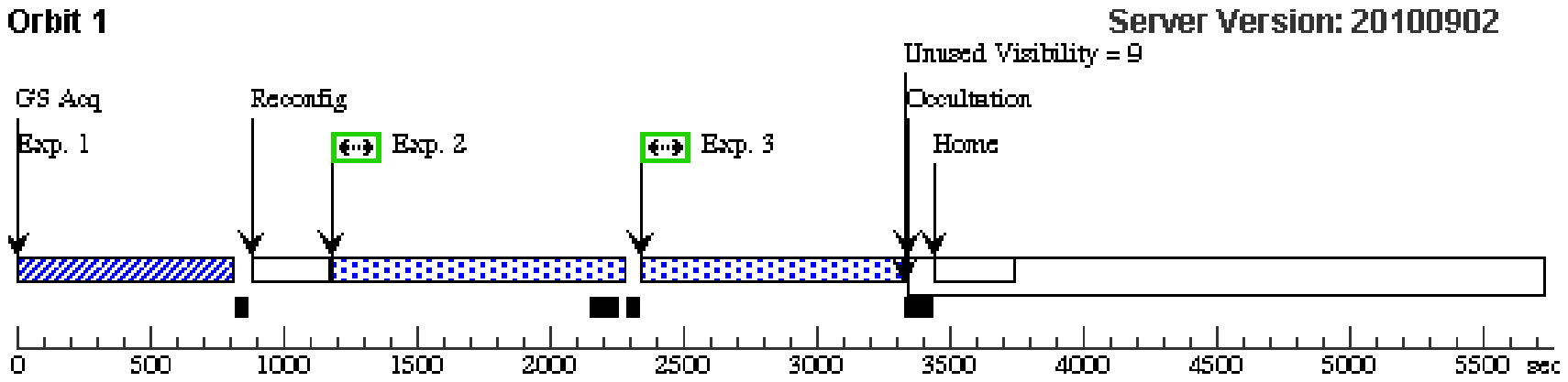
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(6)	SDSSJ0955+4322	RA: 09 55 46.3560 (148.9431500d) Dec: +43 22 44.80 (43.37911d) Equinox: J2000	Redshift: 3.24	V=19.5 GALEX: NUV=3.8e-17, FUV=16.5e-17; SDSS: u=21.29, g=19.69, r=19.48, i=19.43, z=19.42	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	TARG-ACQ	(6) SDSSJ0955+4322	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				208 Secs *[==>]*	*[1]*
Comments: Multiple NUV observations available; the faintest was used for target acquisition times, the brightest for bright object protection.									
2		(6) SDSSJ0955+4322	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=3; BUFFER-TIME=823			923 Secs *[==>923.0 Secs]*	*[1]*
3		(6) SDSSJ0955+4322	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=4; BUFFER-TIME=923			923 Secs *[==>923.0 Secs]*	*[1]*
Comments: Exposure time can be adjusted as needed to fill orbit.									

Orbit Structure



Visit

Proposal 12178, Visit 07, scheduling Sat Mar 19 01:14:31 GMT 2011

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

(Visit 07) Warning (Form): If the target coordinates are not known to 0.4" (or better) an ACQ/SEARCH should precede the ACQ/IMAGE.

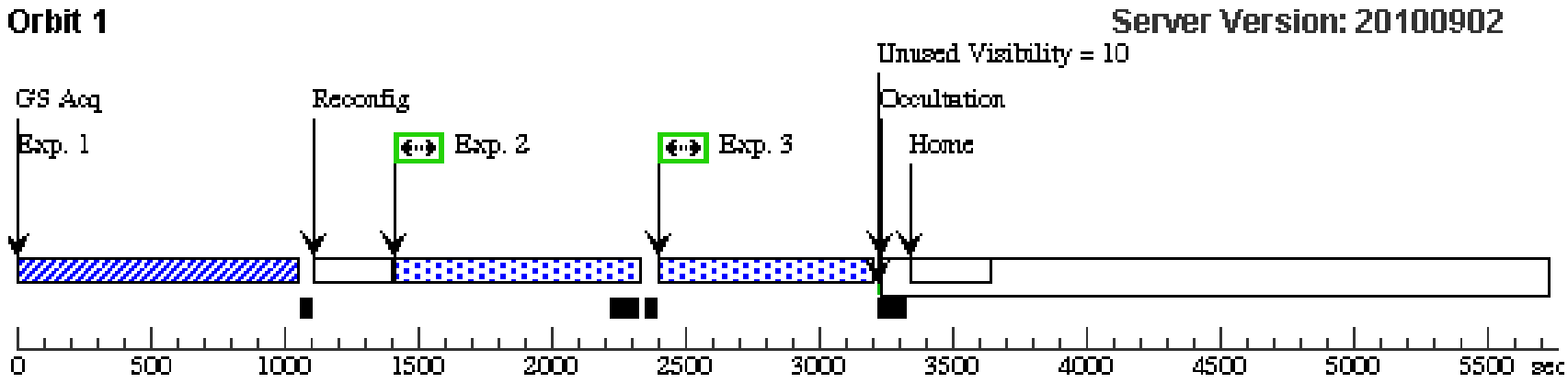
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(7)	SDSSJ1025+0452	RA: 10 25 9.6456 (156.2901900d) Dec: +04 52 46.70 (4.87964d) Equinox: J2000	Redshift: 3.22	V=18.0 GALEX: NUV=4.4e-17, FUV=14.1e-17; SDSS: u=21.75, g=18.27, r=18.01, i=17.91, z=17.83	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	TARG-ACQ	(7) SDSSJ1025+0452	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				327 Secs *[==>]*	*[1]*
Comments: Multiple NUV observations available; the faintest was used for target acquisition times, the brightest for bright object protection.									
2		(7) SDSSJ1025+0452	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=3; BUFFER-TIME=650			750 Secs *[==>750.0 Secs]*	*[1]*
3		(7) SDSSJ1025+0452	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=4; BUFFER-TIME=750			750 Secs *[==>750.0 Secs]*	*[1]*
Comments: Exposure time can be adjusted as needed to fill orbit.									

Orbit Structure



Visit

Proposal 12178, Visit 08, completed Sat Mar 19 01:14:32 GMT 2011

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

(Visit 08) Warning (Form): If the target coordinates are not known to 0.4" (or better) an ACQ/SEARCH should precede the ACQ/IMAGE.

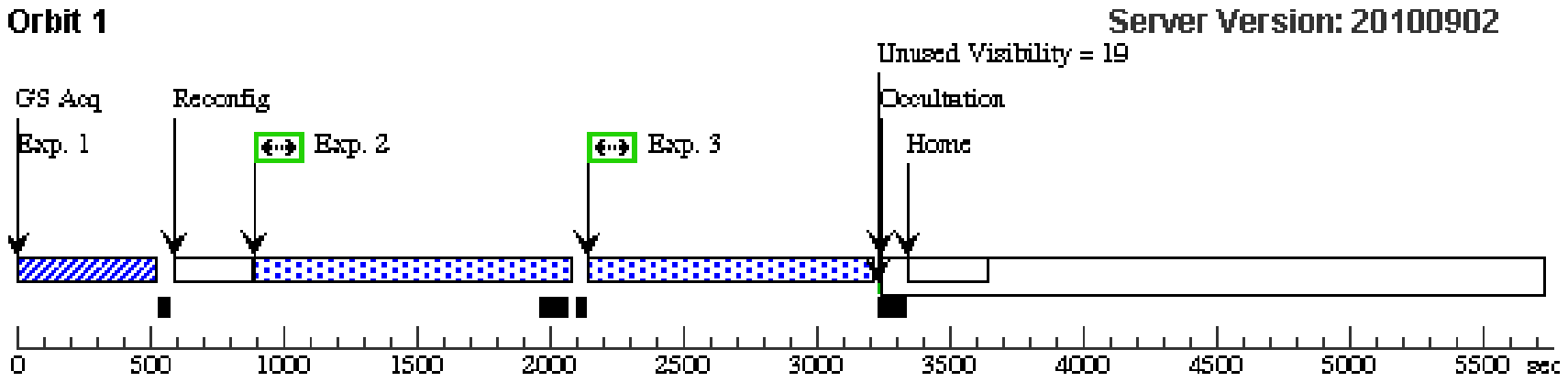
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(8)	HS1024+1849	RA: 10 27 34.1328 (156.8922200d) Dec: +18 34 27.59 (18.57433d) Equinox: J2000	Redshift: 2.85	V=17.9 GALEX: NUV=23.8e-17, FUV=47.4e-17; SDSS: u=18.90, g=18.00, r=17.83, i=17.70, z=17.70	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	TARG-ACQ	(8) HS1024+1849	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				66 Secs *[==>]*	*[1]*
Comments: Only one epoch of UV observations available; 0.5x flux was used for target acquisition time, 2.5x flux was used for bright object protection.									
2		(8) HS1024+1849	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=3; BUFFER-TIME=919			1019 Secs *[==>1019.0 Secs]*	*[1]*
3		(8) HS1024+1849	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=4; BUFFER-TIME=1019			1019 Secs *[==>1019.0 Secs]*	*[1]*
Comments: Exposure time can be adjusted as needed to fill orbit.									

Orbit Structure



Visit

Proposal 12178, Visit 09, failed Sat Mar 19 01:14:32 GMT 2011

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

(Visit 09) Warning (Form): If the target coordinates are not known to 0.4" (or better) an ACQ/SEARCH should precede the ACQ/IMAGE.

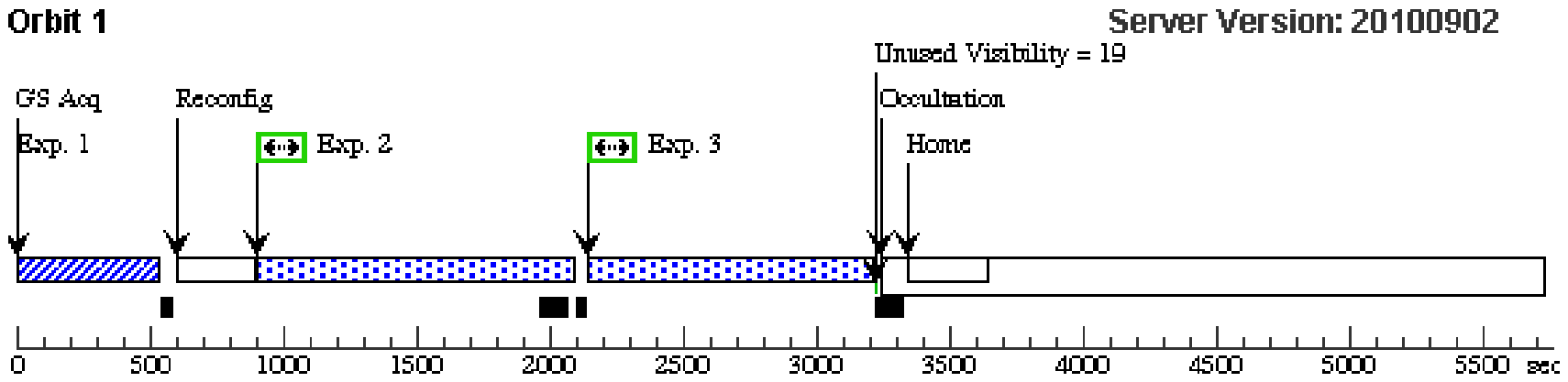
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(9)	Q1215+1202	RA: 12 18 15.5928 (184.5649700d) Dec: +11 45 51.89 (11.76441d) Equinox: J2000	Redshift: 2.84	V=18.0 GALEX: NUV=22.9e-17, FUV=24.9e-17; SDSS: u=18.69, g=18.01, r=17.91, i=17.88, z=17.91	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	TARG-ACQ	(9) Q1215+1202	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				69 Secs *[==>]*	*[1]*
Comments: Only one epoch of UV observations available; 0.5x flux was used for target acquisition time, 2.5x flux was used for bright object protection.									
2		(9) Q1215+1202	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=3; BUFFER-TIME=914			1014 Secs *[==>1014.0 Secs]*	*[1]*
3		(9) Q1215+1202	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=4; BUFFER-TIME=1014			1014 Secs *[==>1014.0 Secs]*	*[1]*
Comments: Exposure time can be adjusted as needed to fill orbit.									

Orbit Structure



Visit

Proposal 12178, Visit 59 Sat Mar 19 01:14:32 GMT 2011

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

(Visit 59) Warning (Form): If the target coordinates are not known to 0.4" (or better) an ACQ/SEARCH should precede the ACQ/IMAGE.

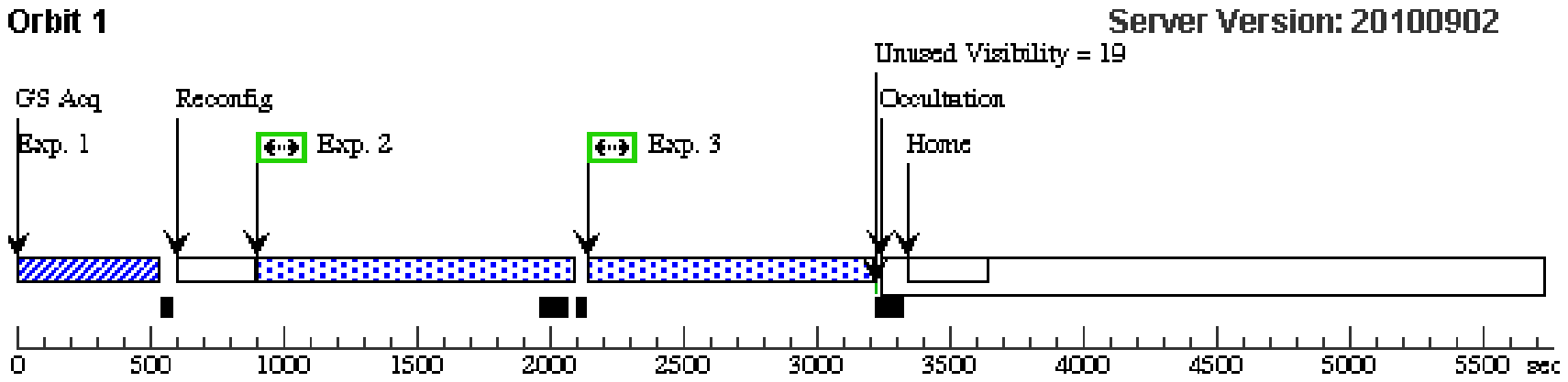
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(9)	Q1215+1202	RA: 12 18 15.5928 (184.5649700d) Dec: +11 45 51.89 (11.76441d) Equinox: J2000	Redshift: 2.84	V=18.0 GALEX: NUV=22.9e-17, FUV=24.9e-17; SDSS: u=18.69, g=18.01, r=17.91, i=17.88, z=17.91	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	TARG-ACQ	(9) Q1215+1202	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				69 Secs *[==>]*	*[1]*
Comments: Only one epoch of UV observations available; 0.5x flux was used for target acquisition time, 2.5x flux was used for bright object protection.									
2		(9) Q1215+1202	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=3; BUFFER-TIME=914			1014 Secs *[==>1014.0 Secs]*	*[1]*
3		(9) Q1215+1202	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=4; BUFFER-TIME=1014			1014 Secs *[==>1014.0 Secs]*	*[1]*
Comments: Exposure time can be adjusted as needed to fill orbit.									

Orbit Structure



Visit

Proposal 12178, Visit 10, scheduling Sat Mar 19 01:14:33 GMT 2011

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

(Visit 10) Warning (Form): If the target coordinates are not known to 0.4" (or better) an ACQ/SEARCH should precede the ACQ/IMAGE.

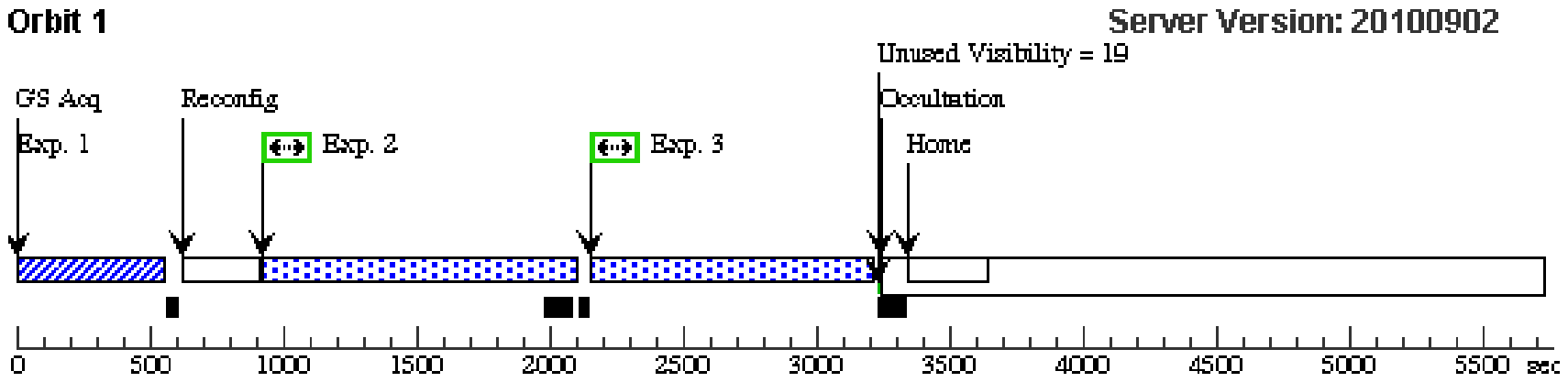
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(10)	Q1216+1656	RA: 12 19 20.4024 (184.8350100d) Dec: +16 39 29.53 (16.65820d) Equinox: J2000	Redshift: 2.82	V=18.1 GALEX: NUV=19.5e-17, FUV=22.0e-17; SDSS: u=19.18, g=18.26, r=18.14, i=18.05, z=17.98	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	TARG-ACQ	(10) Q1216+1656	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				81 Secs *[==>]*	*[1]*
Comments: Only one epoch of UV observations available; 0.5x flux was used for target acquisition time, 2.5x flux was used for bright object protection.									
2		(10) Q1216+1656	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=3; BUFFER-TIME=904			1004 Secs *[==>1004.0 Secs]*	*[1]*
3		(10) Q1216+1656	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=4; BUFFER-TIME=1004			1004 Secs *[==>1004.0 Secs]*	*[1]*
Comments: Exposure time can be adjusted as needed to fill orbit.									

Orbit Structure



Visit

Proposal 12178, Visit 11, scheduling Sat Mar 19 01:14:33 GMT 2011

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

(Visit 11) Warning (Form): If the target coordinates are not known to 0.4" (or better) an ACQ/SEARCH should precede the ACQ/IMAGE.

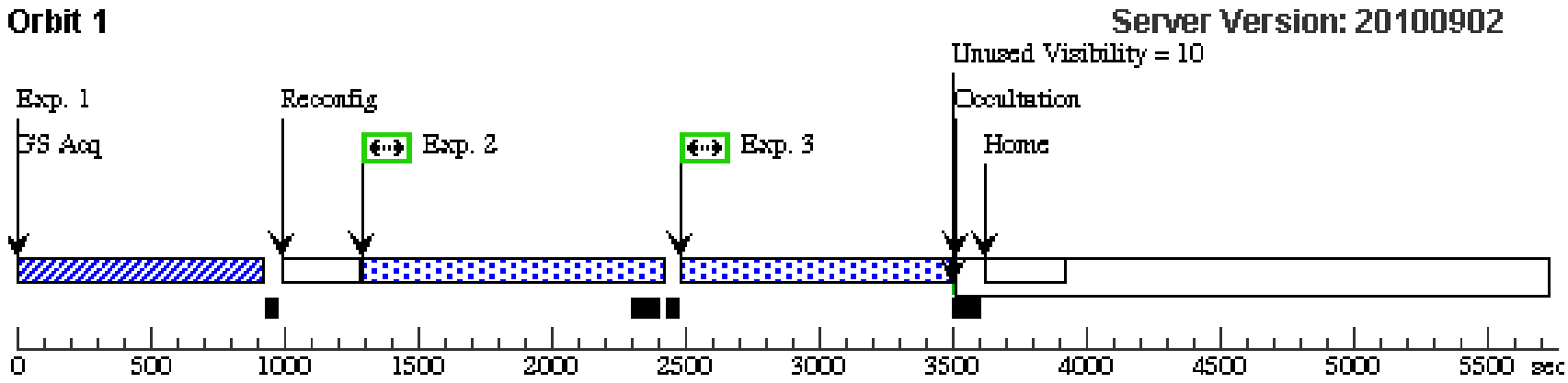
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(11)	SDSSJ1244+6201	RA: 12 44 56.9829 (191.2374288d) Dec: +62 01 43.03 (62.02862d) Equinox: J2000	Redshift: 3.06	V=18.6 GALEX: NUV=5.95e-17, FUV=17.0e-17; SDSS: u=20.20, g=18.77, r=18.63, i=18.68, z=18.63	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	TARG-ACQ	(11) SDSSJ1244+6201	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				265 Secs *[==>]*	*[1]*
Comments: Only one epoch of UV observations available; 0.5x flux was used for target acquisition time, 2.5x flux was used for bright object protection.									
2		(11) SDSSJ1244+6201	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=3; BUFFER-TIME=853			953 Secs *[==>953.0 Secs]*	*[1]*
3		(11) SDSSJ1244+6201	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=4; BUFFER-TIME=953			953 Secs *[==>953.0 Secs]*	*[1]*
Comments: Exposure time can be adjusted as needed to fill orbit.									

Orbit Structure



Visit

Proposal 12178, Visit 12, scheduling Sat Mar 19 01:14:33 GMT 2011

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

(Visit 12) Warning (Form): If the target coordinates are not known to 0.4" (or better) an ACQ/SEARCH should precede the ACQ/IMAGE.

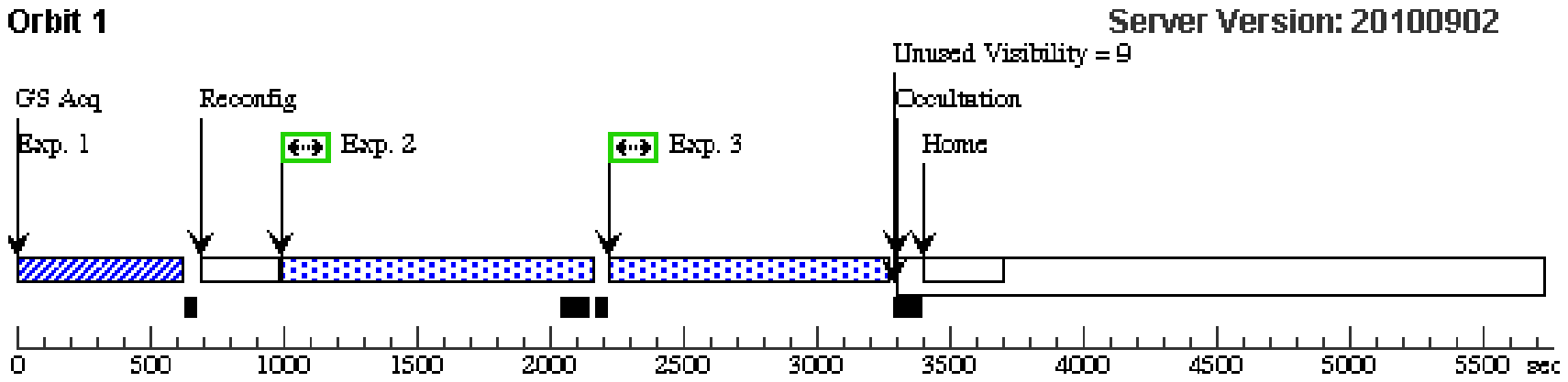
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(12)	SDSSJ1443+3546	RA: 14 43 11.5896 (220.7982900d) Dec: +35 46 46.37 (35.77955d) Equinox: J2000	Redshift: 2.94	V=19.1 GALEX: NUV=8.9e-17, FUV=19.0e-17; SDSS: u=19.88, g=18.84, r=18.79, i=18.74, z=18.75	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	TARG-ACQ	(12) SDSSJ1443+3546	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				116 Secs *[==>]*	*[1]*
Comments: Multiple NUV observations available; the faintest was used for target acquisition times, the brightest for bright object protection.									
2		(12) SDSSJ1443+3546	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=3; BUFFER-TIME=895			995 Secs *[==>995.0 Secs]*	*[1]*
3		(12) SDSSJ1443+3546	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=4; BUFFER-TIME=995			995 Secs *[==>995.0 Secs]*	*[1]*
Comments: Exposure time can be adjusted as needed to fill orbit.									

Orbit Structure



Visit

Proposal 12178, Visit 13, scheduling Sat Mar 19 01:14:33 GMT 2011

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

(Visit 13) Warning (Form): If the target coordinates are not known to 0.4" (or better) an ACQ/SEARCH should precede the ACQ/IMAGE.

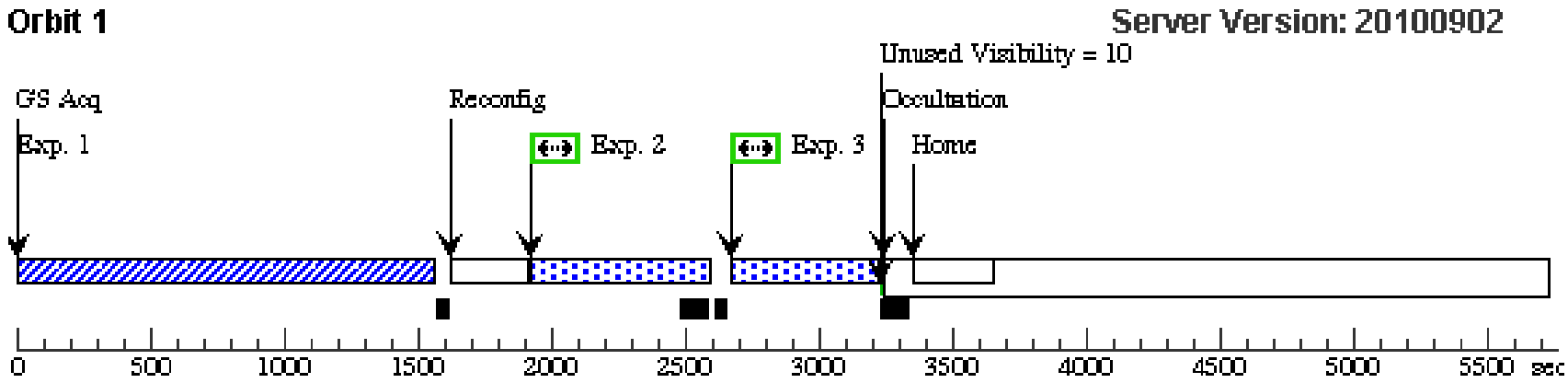
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(13)	SDSSJ1508+1654	RA: 15 08 28.7808 (227.1199200d) Dec: +16 54 33.13 (16.90920d) Equinox: J2000	Redshift: 3.17	V=18.4 GALEX: NUV=2.1e-17, FUV=15.5e-17; SDSS: u=21.20, g=18.70, r=18.36, i=18.18, z=18.18	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	TARG-ACQ	(13) SDSSJ1508+1654	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				582 Secs *[==>]*	*[1]*
Comments: Only one epoch of UV observations available; 0.5x flux was used for target acquisition time, 2.5x flux was used for bright object protection. Acquisition time estimate is for S/N=35 since this object is NUV-faint, although relatively FUV-bright.									
2		(13) SDSSJ1508+1654	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=3; BUFFER-TIME=400			500 Secs *[==>498.0 Secs]*	*[1]*
3		(13) SDSSJ1508+1654	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=4; BUFFER-TIME=500			500 Secs *[==>498.0 Secs]*	*[1]*
Comments: Exposure time can be adjusted as needed to fill orbit.									

Orbit Structure



Visit

Proposal 12178, Visit 14, completed Sat Mar 19 01:14:34 GMT 2011

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

(Visit 14) Warning (Form): If the target coordinates are not known to 0.4" (or better) an ACQ/SEARCH should precede the ACQ/IMAGE.

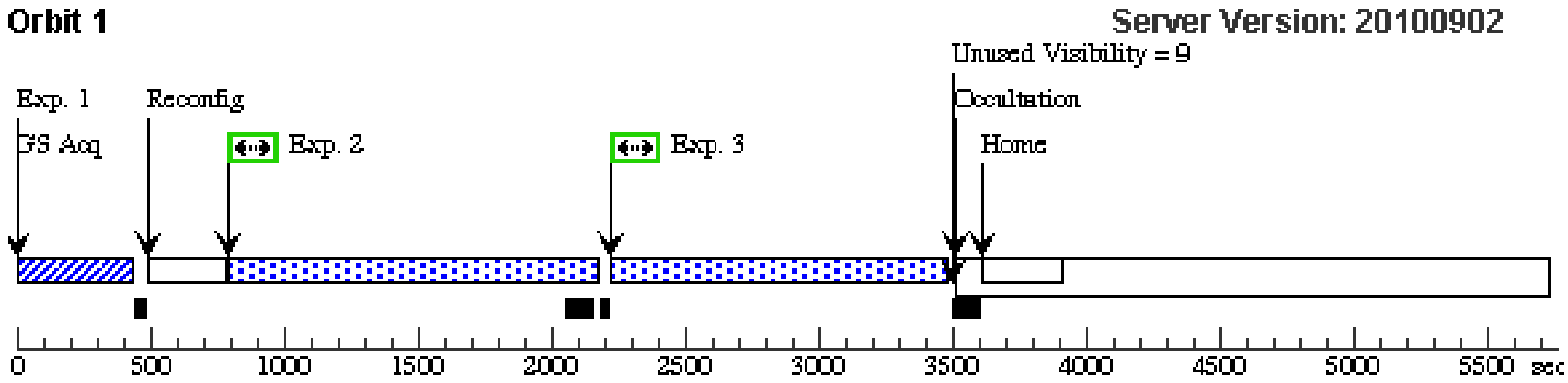
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(14)	4C57.27	RA: 16 03 55.9279 (240.9830329d) Dec: +57 30 54.41 (57.51511d) Equinox: J2000	Redshift: 2.86	V=17.2 GALEX: NUV=55.5e-17, FUV=48.4e-17; SDSS: u=18.24, g=17.42, r=17.34, i=17.26, z=17.15	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	TARG-ACQ	(14) 4C57.27	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				17 Secs *[==>]*	*[1]*
Comments: Multiple NUV observations available; the faintest was used for target acquisition times, the brightest for bright object protection.									
2		(14) 4C57.27	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=3; BUFFER-TIME=1104			1204 Secs *[==>1204.0 Secs]*	*[1]*
3		(14) 4C57.27	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=4; BUFFER-TIME=1204			1204 Secs *[==>1204.0 Secs]*	*[1]*
Comments: Exposure time can be adjusted as needed to fill orbit.									

Orbit Structure



Visit

Proposal 12178, Visit 15, scheduling Sat Mar 19 01:14:34 GMT 2011

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

(Visit 15) Warning (Form): If the target coordinates are not known to 0.4" (or better) an ACQ/SEARCH should precede the ACQ/IMAGE.

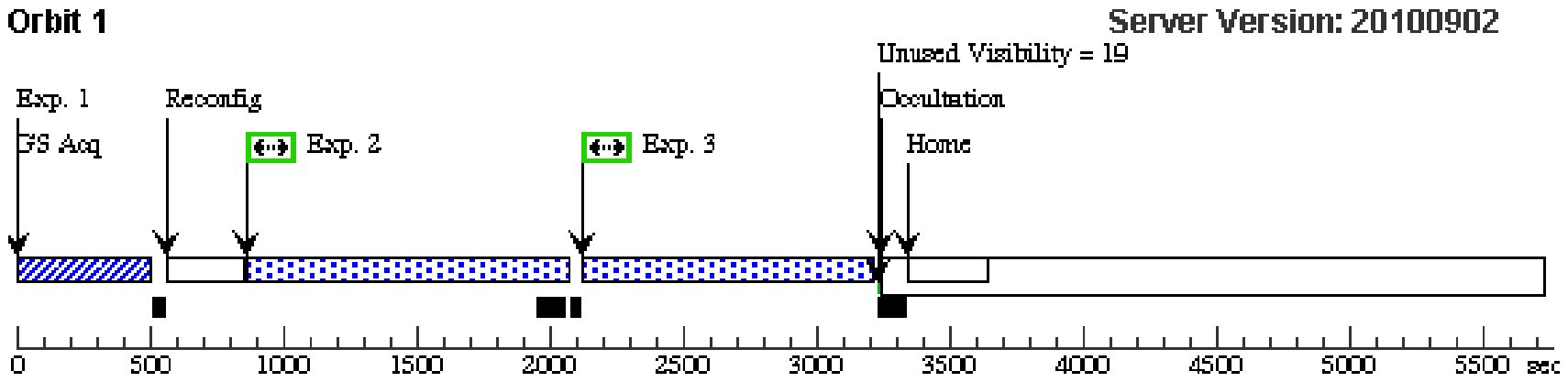
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(15)	SDSSJ1604+1645	RA: 16 04 41.4744 (241.1728100d) Dec: +16 45 38.34 (16.76065d) Equinox: J2000	Redshift: 2.94	V=16.7 GALEX: NUV=30.4e-17, FUV=18.2e-17; SDSS: u=18.16, g=16.90, r=16.69, i=16.50, z=16.43	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	TARG-ACQ	(15) SDSSJ1604+1645	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				52 Secs *[==>]*	*[1]*
Comments: Only one epoch of UV observations available; 0.5x flux was used for target acquisition time, 2.5x flux was used for bright object protection.									
2		(15) SDSSJ1604+1645	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=3; BUFFER-TIME=933			1033 Secs *[==>1033.0 Secs]*	*[1]*
3		(15) SDSSJ1604+1645	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=4; BUFFER-TIME=1033			1033 Secs *[==>1033.0 Secs]*	*[1]*
Comments: Exposure time can be adjusted as need to fill orbit.									

Orbit Structure



Visit

Proposal 12178, Visit 16, completed Sat Mar 19 01:14:34 GMT 2011

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

(Visit 16) Warning (Form): If the target coordinates are not known to 0.4" (or better) an ACQ/SEARCH should precede the ACQ/IMAGE.

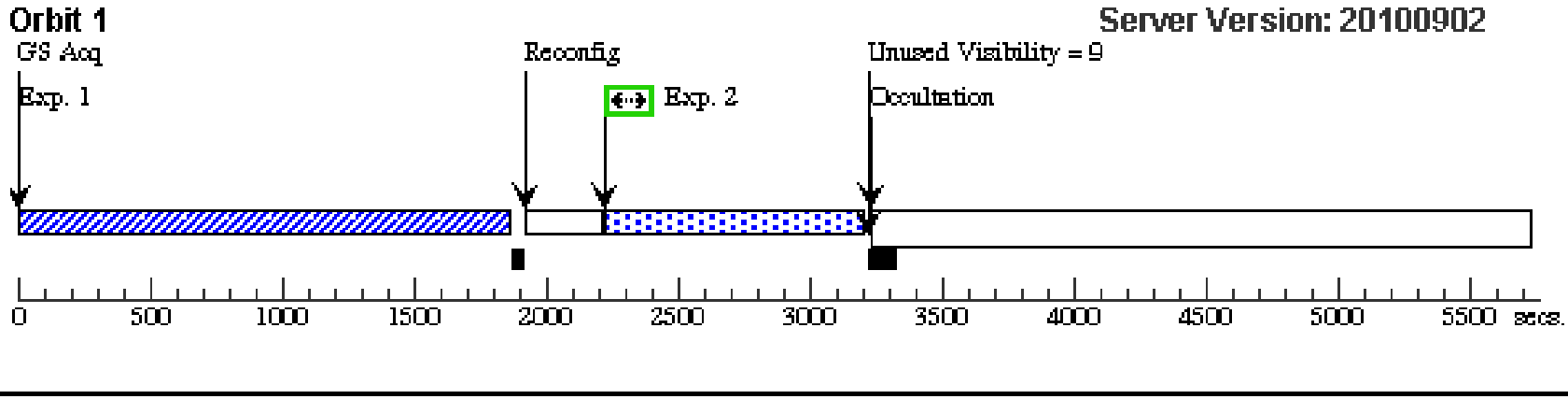
Fixed Targets

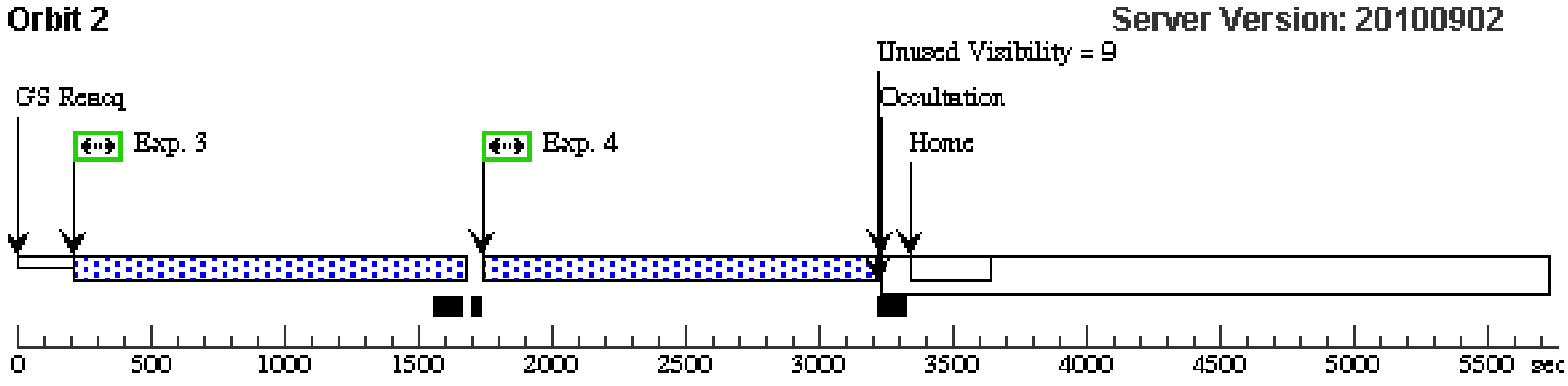
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(16)	SDSSJ2257+0016	RA: 22 57 59.6712 (344.4986300d) Dec: +00 16 45.71 (.27936d) Equinox: J2000	Redshift: 3.77	V=18.8 GALEX: NUV=1.1e-17, FUV=2.9e-17; SDSS: u=24.85, g=20.02, r=18.80, i=18.77, z=18.88	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	TARG-ACQ	(16) SDSSJ2257+0016	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				732 Secs *[==>]*	***[1]***
Comments: Multiple NUV observations available; the faintest was used for target acquisition times, the brightest for bright object protection.									
2		(16) SDSSJ2257+0016	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=2; BUFFER-TIME=810			810 Secs *[==>810.0 Secs]*	***[1]***
Comments: Exposure time can be adjusted as needed to fill orbit.									
3		(16) SDSSJ2257+0016	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=3; BUFFER-TIME=1315			1415 Secs *[==>1415.0 Secs]*	***[2]***
4		(16) SDSSJ2257+0016	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=4; BUFFER-TIME=1415			1415 Secs *[==>1415.0 Secs]*	***[2]***
Comments: Exposure time can be adjusted as needed to fill orbit.									

Orbit Structure





Visit

Proposal 12178, Visit 17, completed Sat Mar 19 01:14:34 GMT 2011

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: (none)

Diagnostics

(Visit 17) Warning (Form): If the target coordinates are not known to 0.4" (or better) an ACQ/SEARCH should precede the ACQ/IMAGE.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(17)	SDSSJ2345+1512	RA: 23 45 22.1952 (356.3424800d) Dec: +15 12 17.34 (15.20482d) Equinox: J2000	Redshift: 3.59	V=19.3 GALEX: NUV=1.4e-17, FUV=1.8e-17; SDSS: u=22.80, g=20.04, r=19.26, i=19.14, z=19.22	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	TARG-ACQ	(17) SDSSJ2345+1512	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				607 Secs *[==>]*	***[1]***
Comments: Multiple NUV observations available; the faintest was used for target acquisition times, the brightest for bright object protection.									
2		(17) SDSSJ2345+1512	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=2; BUFFER-TIME=1075			1075 Secs *[==>1075.0 Secs]*	***[1]***
Comments: Exposure time can be adjusted as needed to fill orbit.									
3		(17) SDSSJ2345+1512	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=3; BUFFER-TIME=1325			1425 Secs *[==>1425.0 Secs]*	***[2]***
4		(17) SDSSJ2345+1512	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=4; BUFFER-TIME=1425			1425 Secs *[==>1425.0 Secs]*	***[2]***
Comments: Exposure time can be adjusted as needed to fill orbit.									

Orbit Structure