11220 - Mapping the FUV Evolution of Type IIn Supernovae

Cycle: 16, Proposal Category: GO

(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) SN2006TF	ACS/SBC	1	27-Feb-2008 21:02:29.0	yes
51	(1) SN2006TF	ACS/SBC	1	27-Feb-2008 21:02:33.0	yes
02	(2) SN2006RX	ACS/SBC	1	27-Feb-2008 21:02:36.0	yes
03	(3) SN2007FK	ACS/SBC	1	27-Feb-2008 21:02:39.0	yes
04	(4) SN2007FW	ACS/SBC	1	27-Feb-2008 21:02:41.0	yes
05	(5) SN2006DB	ACS/SBC	1	27-Feb-2008 21:02:44.0	yes
06	(6) SN2006CV	ACS/SBC	1	27-Feb-2008 21:02:46.0	yes
07	(7) SN2007BW	ACS/SBC	1	27-Feb-2008 21:02:49.0	yes
08	(8) SN2006AG	ACS/SBC	1	27-Feb-2008 21:02:51.0	yes

9 Total Orbits Used

ABSTRACT

We will use the PR110L prism on the SBC of ACS to map the FUV evolution of Type IIn supernovae (SNe). The main goal of this proposal is to measure the FUV continuum, Ly-a emission line flux, and their evolution to (1) quantify and interpret Type IIn SN transient event detections at high redshift and (2) dramatically improve current high redshift Type IIn selection criteria. We show that the inherent properties of Type IIn SNe facilitate high redshift detection. We will observe the rest-frame FUV of a sample of eight $0.02 < z < 0.33$ Type IIn SNe to directly measure the survival of Ly-alpha photons in low to intermediate redshift Type IIn SNe environments and extrapolate the results to high redshift. We will calibrate relationships such as FUV luminosity vs. emission line flux and measure emission line evolution vs. FUV light evolution. The intent is to categorize and improve the utility of Type IIn SNe.

OBSERVING DESCRIPTION

We will observe eight low- and intermediate-redshift Type IIn supernovae (SNe) in various stages of evolution. The continuum flux for each SNe was estimated using a power-law fit to the data of Li et al. 2002, PASP, 114, 403 and various late-time decline rates found in the literature. The Ly-alpha emission-line flux and evolution was calculated using both the relationship between the Ly-alpha and H-alpha flux from Fransson et al. 2002, ApJ, 572, 350 and Fransson et al. 2005, ApJ, 622, 991 and a broken power law fit to H-alpha data compiled from the literature.

Visit

Proposal 11220, Visit 01, failed Thu Feb 28 02:02:55 GMT 2008

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/SBC

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-SBC-MOSAIC-BOX Purpose=MOSAIC Number Of Points=4 Point Spacing=28.801 Line Spacing=32.957	Coordinate Frame=POS-TARG Pattern Orientation=90.0 Angle Between Sides=95.76 Center Pattern=true		(2)

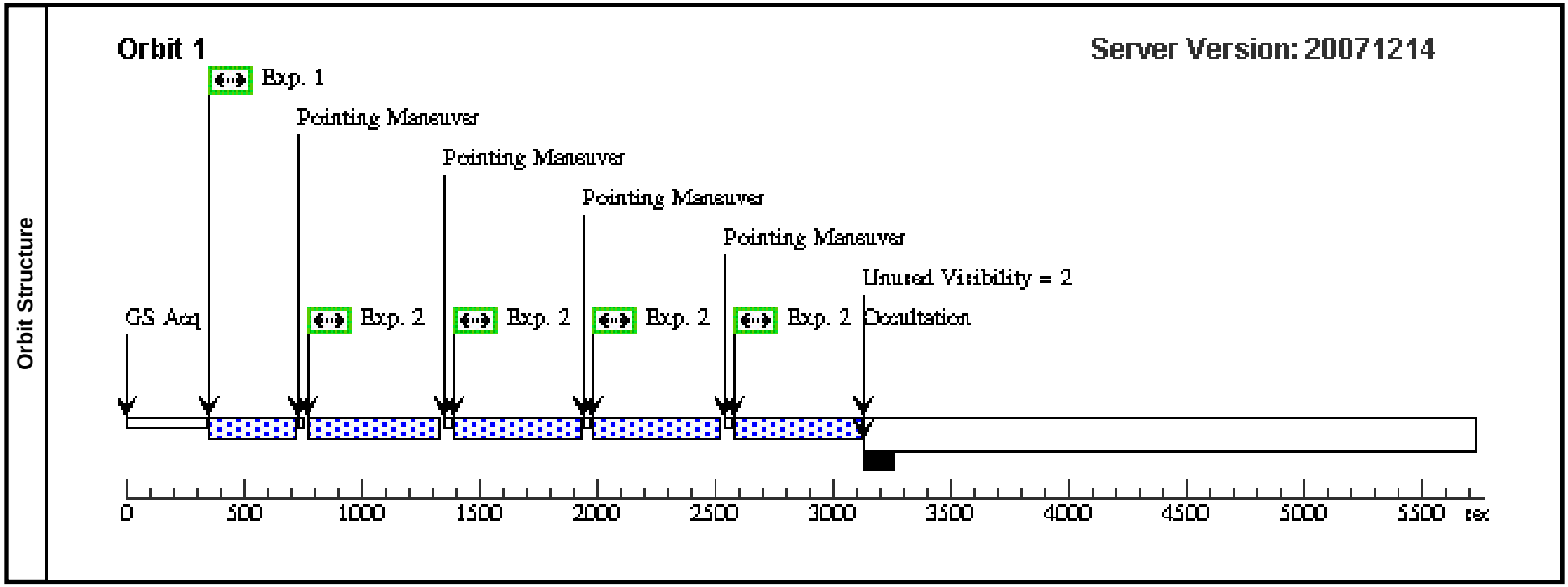
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	SN2006TF Alt Name1: J124615.81+112555.6-SN	RA: 12 46 15.8200 (191.5659167d) Dec: +11 25 56.30 (11.43231d) Equinox: J2000	Redshift: 0.0637	V=19+/-1 E(B-V)=0.026, SURF-BKG(G)=27.4+/-0.2, F-LINE(1216)=4.2+/-1e-13, W-LINE(1216)=15.0+/-5.0	Reference Frame: ICRS

Comments: Supernova magnitude is estimated as described in Observing_Description and is for an observation on December 12, 2007 (365 days old). The supernova continuum will fade with time, however the emission line may not. The host galaxy is J124615.81+112555.6. SDSS reports 20.95g. The host galaxy size is 0.37' x 0.34' and has colors (u-g)=1.29 and (g-r)=0.27.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(1) SN2006TF	ACS/SBC, ACCUM, SBC	F115LP				300.0 Secs	
								[==>300.0 Secs]	***[1]***
2		(1) SN2006TF	ACS/SBC, ACCUM, SBC	PR110L			Pattern 2-2 (1)	1000.0 Secs	
								[==>514.0 Secs (Pattern 1)]	***[1]***
								[==>514.0 Secs (Pattern 2)]	
								[==>514.0 Secs (Pattern 3)]	
								[==>514.0 Secs (Pattern 4)]	


Orbit Structure
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Exp. 1
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Unused Visibility = 2
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Exp. 2
Exp. 2
Exp. 2
Exp. 2
Occultation
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sec

Visit

Proposal 11220, Visit 51, pi Thu Feb 28 02:02:55 GMT 2008

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/SBC

Special Requirements: (none)

Comments: HOPR repeat of visit 1

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=ACS-SBC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.179 Line Spacing=0.116	Coordinate Frame=POS-TARG Pattern Orientation=20.02 Angle Between Sides=63.65 Center Pattern=false		(2)

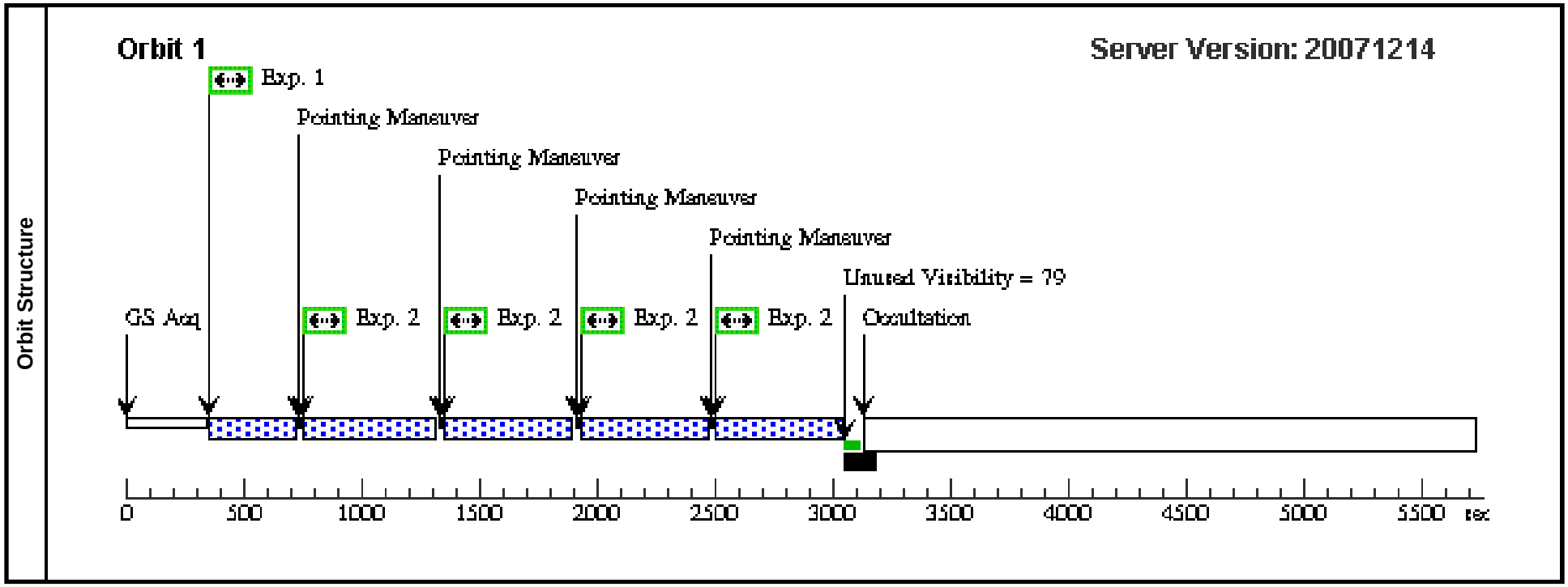
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	SN2006TF Alt Name1: J124615.81+112555.6-SN	RA: 12 46 15.8200 (191.5659167d) Dec: +11 25 56.30 (11.43231d) Equinox: J2000	Redshift: 0.0637	V=19+/-1 E(B-V)=0.026, SURF-BKG(G)=27.4+/-0.2, F-LINE(1216)=4.2+/-1e-13, W-LINE(1216)=15.0+/-5.0	Reference Frame: ICRS

Comments: Supernova magnitude is estimated as described in Observing_Description and is for an observation on December 12, 2007 (365 days old). The supernova continuum will fade with time, however the emission line may not. The host galaxy is J124615.81+112555.6. SDSS reports 20.95g. The host galaxy size is 0.37' x 0.34' and has colors (u-g)=1.29 and (g-r)=0.27.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(1) SN2006TF	ACS/SBC, ACCUM, SBC	F115LP				300.0 Secs	
								[==>300.0 Secs]	***[1]***
2		(1) SN2006TF	ACS/SBC, ACCUM, SBC	PR110L			Pattern 2-2 (2)	514 Secs	
								[==>(Pattern 1)] *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***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Server Version: 20071214
Exp. 1
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Pointing Maneuver
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Exp. 2
Exp. 2
Exp. 2
Exp. 2
Occultation
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Visit

Proposal 11220, Visit 02, pi Thu Feb 28 02:02:56 GMT 2008

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/SBC

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
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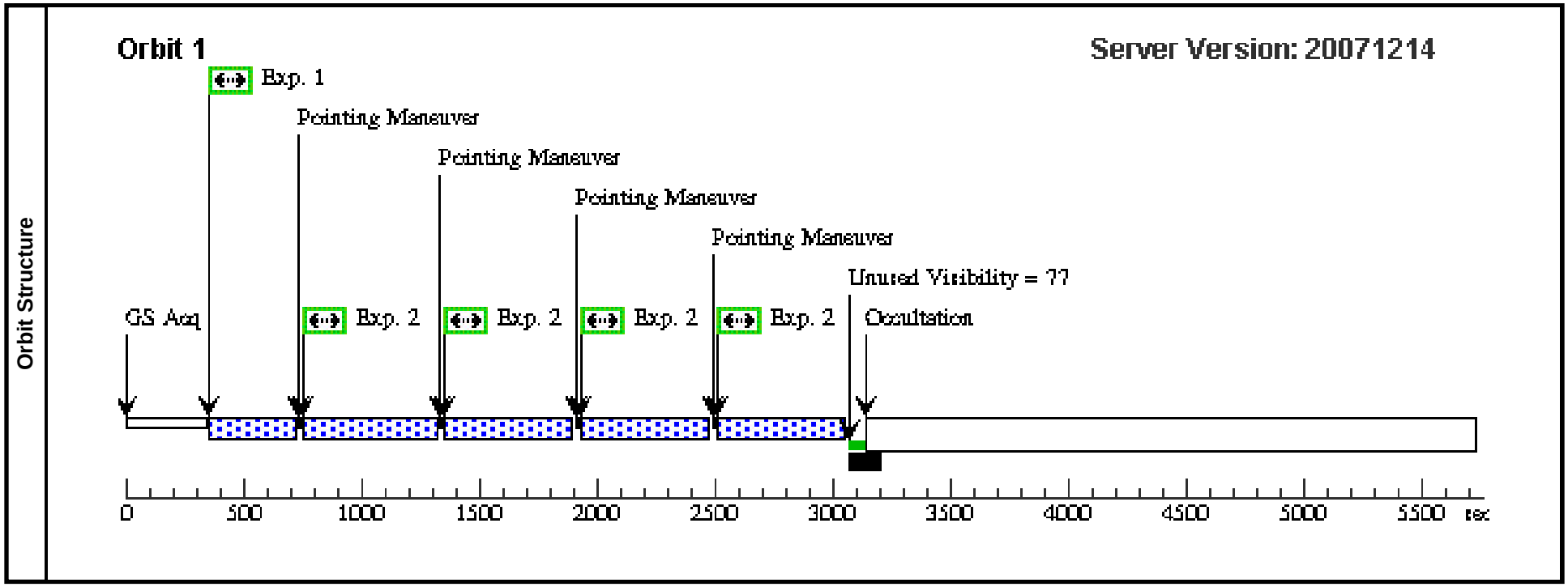
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	SN2006RX Alt Name1: B234033.95-205728.9-SN	RA: 23 43 10.2900 (355.7928750d) Dec: -20 40 53.70 (-20.68158d) Equinox: J2000	Redshift: 0.0568	V=22+/-1 E(B-V)=0.026, SURF-BKG(V)=24.4+/-0.2, F-LINE(1216)=1.9+/-1e-14, W-LINE(1216)=15.0+/-5.0	Reference Frame: ICRS

Comments: Supernova magnitude is estimated as described in Observing_Description and is for an observation on May 8, 2008 (538 days old). The supernova continuum will fade with time, however the emission line may not. The host galaxy is APMUKS(BJ) B234033.95-205728.9 with mag 18.1V. The host galaxy size is 0.42' x 0.22' and has color (V-R)= 0.36.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(2) SN2006RX	ACS/SBC, ACCUM, SBC	F115LP				300.0 Secs	
								[==>300.0 Secs]	***[1]***
2		(2) SN2006RX	ACS/SBC, ACCUM, SBC	PR110L			Pattern 2-2 (2)	517 Secs	
								[==>(Pattern 1)] *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***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Exp. 1
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Pointing Maneuver
Unused Visibility = ??
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Exp. 2
Exp. 2
Exp. 2
Exp. 2
Occultation
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Visit

Proposal 11220, Visit 03, pi Thu Feb 28 02:02:56 GMT 2008

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/SBC

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=ACS-SBC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.179 Line Spacing=0.116	Coordinate Frame=POS-TARG Pattern Orientation=20.02 Angle Between Sides=63.65 Center Pattern=false		(2)

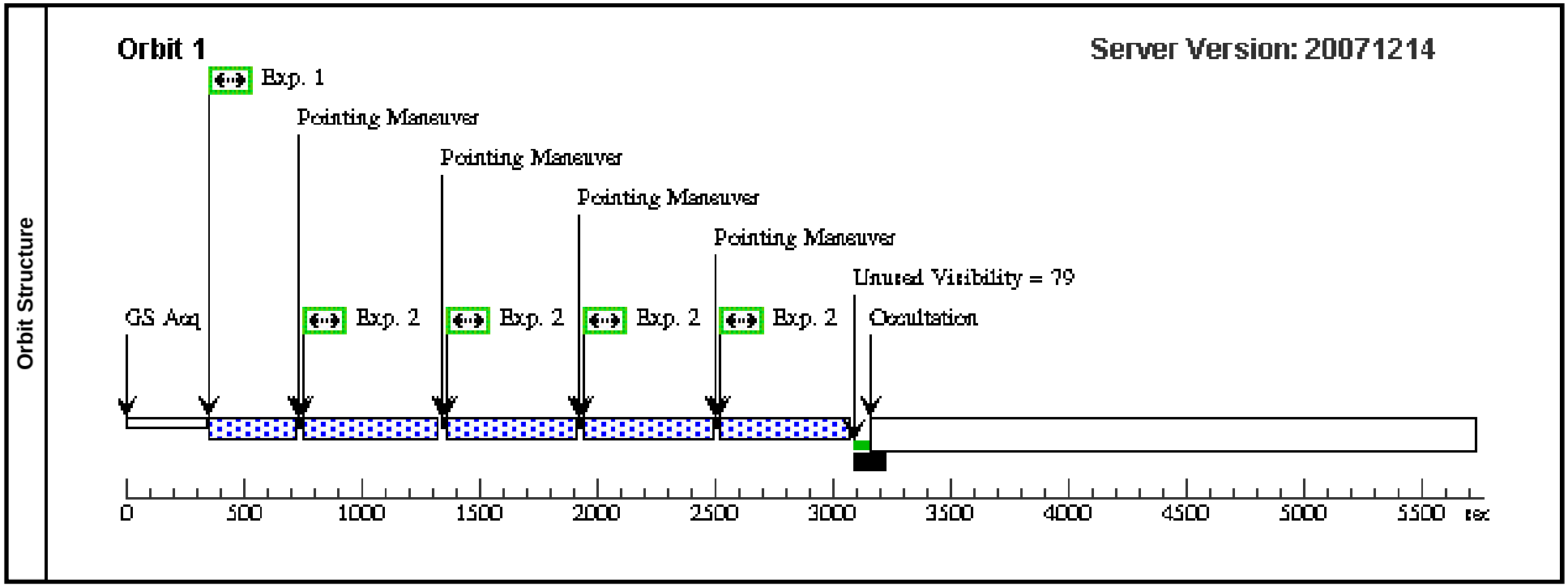
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	SN2007FK Alt Name1: J155035.55+434632.0-SN	RA: 15 50 35.9000 (237.6495833d) Dec: +43 46 32.90 (43.77581d) Equinox: J2000	Redshift: 0.0399	V=20.9+/-1 E(B-V)=0.018, SURF-BKG(V)=23.3+/-0.2, F-LINE(1216)=2.9+/-1e-14, W-LINE(1216)=15.0+/-5.0	Reference Frame: ICRS

Comments: Supernova magnitude is estimated as described in Observing_Description and is for an observation on November 7, 2007 (122 days old). The supernova continuum will fade with time, however the emission line may not. The host galaxy is .J155035.55+434632.0 with magnitude 18.99g. The host galaxy size is ~10" x 5". Redshift is SDSS phot-z.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(3) SN2007FK	ACS/SBC, ACCUM, SBC	F115LP				300.0 Secs	
								[==>300.0 Secs]	***[1]***
2		(3) SN2007FK	ACS/SBC, ACCUM, SBC	PR110L			Pattern 2-2 (2)	522 Secs	
								[==>(Pattern 1)] *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***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Exp. 2
Exp. 2
Exp. 2
Exp. 2
Occultation
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Visit

Proposal 11220, Visit 04, pi Thu Feb 28 02:02:57 GMT 2008

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/SBC

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=ACS-SBC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.179 Line Spacing=0.116	Coordinate Frame=POS-TARG Pattern Orientation=20.02 Angle Between Sides=63.65 Center Pattern=false		(2)

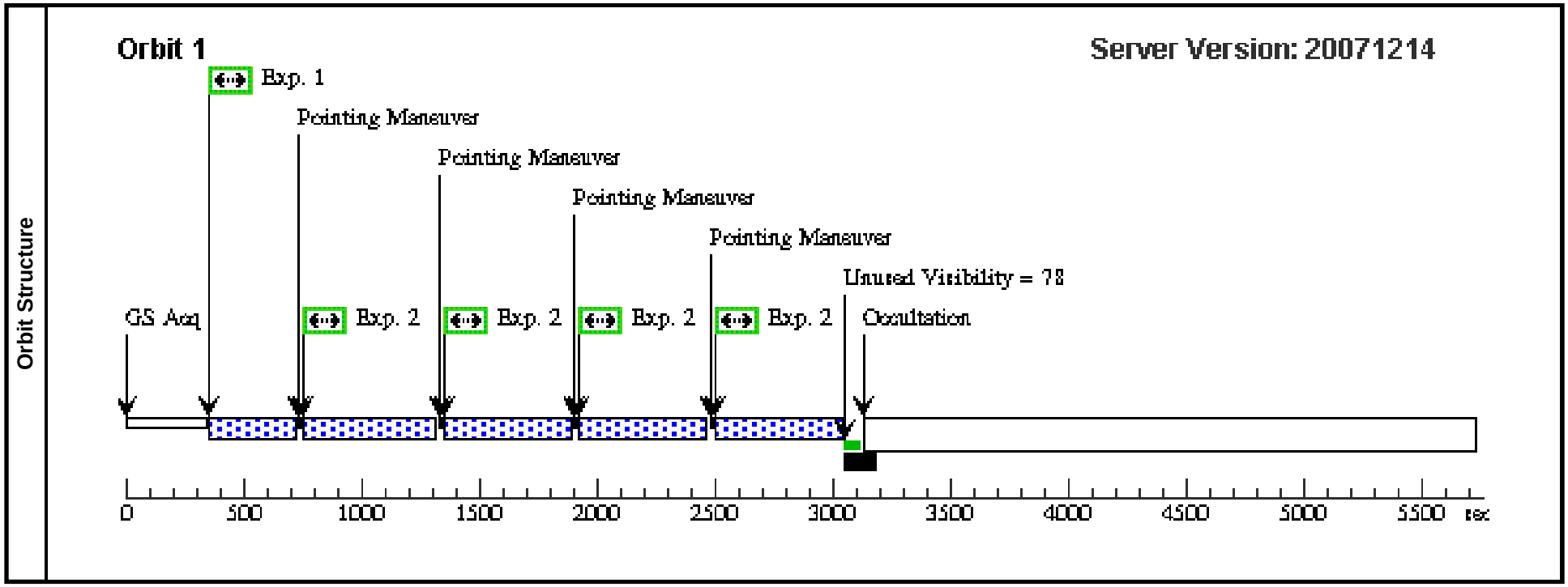
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	SN2007FW Alt Name1: J152109+022620-SN	RA: 15 21 9.1400 (230.2880833d) Dec: +02 26 26.30 (2.44064d) Equinox: J2000	Redshift: 0.1081	V=21.4+/-1 E(B-V)=0.037, SURF-BKG(V)=23.4+/-0.2, F-LINE(1216)=3.1+/-1e-14, W-LINE(1216)=15.0+/-5.0	Reference Frame: ICRS

Comments: Supernova magnitude is estimated as described in Observing_Description and is for an observation on March, 17, 2008 (247 days old). The supernova continuum will fade with time, however the emission line may not. The host galaxy is J152109+022620 with mag 19.02g. The host galaxy size is ~15' x 4'.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(4) SN2007FW	ACS/SBC, ACCUM, SBC	F115LP				300.0 Secs	
								[==>300.0 Secs]	***[1]***
2		(4) SN2007FW	ACS/SBC, ACCUM, SBC	PR110L			Pattern 2-2 (2)	513 Secs	
								[==>(Pattern 1)] *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***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Exp. 1
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Pointing Maneuver
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Exp. 2
Exp. 2
Exp. 2
Exp. 2
Occultation
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Visit

Proposal 11220, Visit 05, completed Thu Feb 28 02:02:57 GMT 2008

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/SBC

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-SBC-MOSAIC-BOX Purpose=MOSAIC Number Of Points=4 Point Spacing=28.801 Line Spacing=32.957	Coordinate Frame=POS-TARG Pattern Orientation=90.0 Angle Between Sides=95.76 Center Pattern=true		(2)

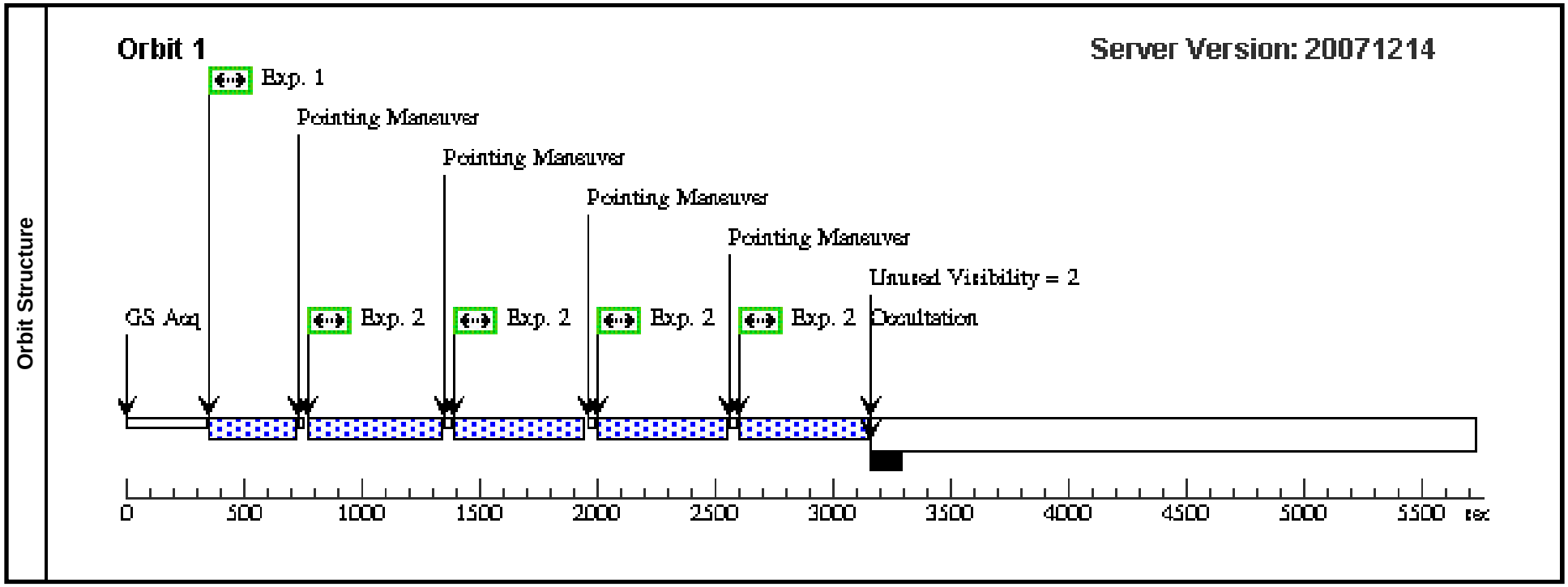
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(5)	SN2006DB Alt Name1: J115538.31+442301.8-SN	RA: 11 55 38.6900 (178.9112083d) Dec: +44 23 1.40 (44.38372d) Equinox: J2000	Redshift: 0.0231	V=20.3+/-1 E(B-V)=0.015, SURF-BKG(G)=23.2+/-0.2, F-LINE(1216)=9.2+/-1e-14, W-LINE(1216)=15.0+/-5.0	Reference Frame: ICRS

Comments: Supernova magnitude is estimated as described in Observing_Description and is for an observation on December 23, 2007 (555 days old). The supernova continuum will fade with time, however the emission line may not. The host galaxy is J115538.31+442301.8 with mag 17.5g. The host galaxy size is 0.35' x 0.19' and has colors (u-g)=1.07 and (g-r)=0.32.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(5) SN2006DB	ACS/SBC, ACCUM, SBC	F115LP				300.0 Secs	
								[==>300.0 Secs]	***[1]***
2		(5) SN2006DB	ACS/SBC, ACCUM, SBC	PR110L			Pattern 2-2 (1)	1100.0 Secs	
								[==>522.0 Secs (Pattern 1)] *[==>522.0 Secs (Pattern 2)]* *[==>522.0 Secs (Pattern 3)]* *[==>522.0 Secs (Pattern 4)]*	***[1]***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Exp. 1
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Pointing Maneuver
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Exp. 2
Exp. 2
Exp. 2
Occultation
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Visit

Proposal 11220, Visit 06, completed Thu Feb 28 02:02:57 GMT 2008

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/SBC

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-SBC-MOSAIC-BOX Purpose=MOSAIC Number Of Points=4 Point Spacing=28.801 Line Spacing=32.957	Coordinate Frame=POS-TARG Pattern Orientation=90.0 Angle Between Sides=95.76 Center Pattern=true		(2)

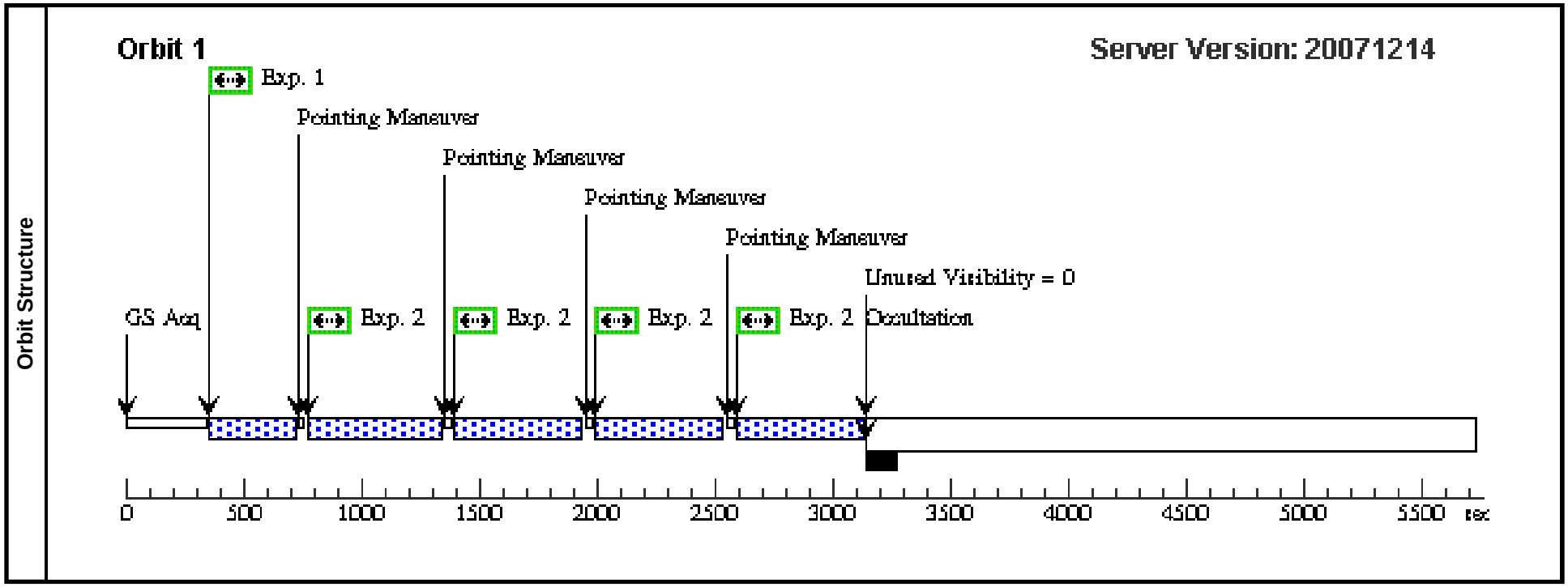
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(6)	SN2006CV Alt Name1: J144747.83+231758.6-SN	RA: 14 47 47.8300 (221.9492917d) Dec: +23 17 58.60 (23.29961d) Equinox: J2000	Redshift: 0.0752	V=22.2+/-1 E(B-V)=0.033, SURF-BKG(G)=26.19+/-0.2, F-LINE(1216)=1.6+/-1e-14, W-LINE(1216)=15.0+/-5.0	Reference Frame: ICRS

Comments: Supernova magnitude is estimated as described in Observing_Description and is for an observation on December 15, 2007 (562 days old). The supernova continuum will fade with time, however the emission line may not. The host galaxy is NSF J144747.83+231758.6 with mag 22.86g. The host galaxy size is <5" x 5" and colors (u-g)=1.61 and (g-r)=0.30.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(6) SN2006CV	ACS/SBC, ACCUM, SBC	F115LP				300.0 Secs	
								[==>300.0 Secs]	***[1]***
2		(6) SN2006CV	ACS/SBC, ACCUM, SBC	PR110L			Pattern 2-2 (1)	1100.0 Secs	
								[==>517.0 Secs (Pattern 1)] *[==>517.0 Secs (Pattern 2)]* *[==>517.0 Secs (Pattern 3)]* *[==>517.0 Secs (Pattern 4)]*	***[1]***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Exp. 2
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Exp. 2
Occultation
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Visit

Proposal 11220, Visit 07, pi Thu Feb 28 02:02:58 GMT 2008

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/SBC

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
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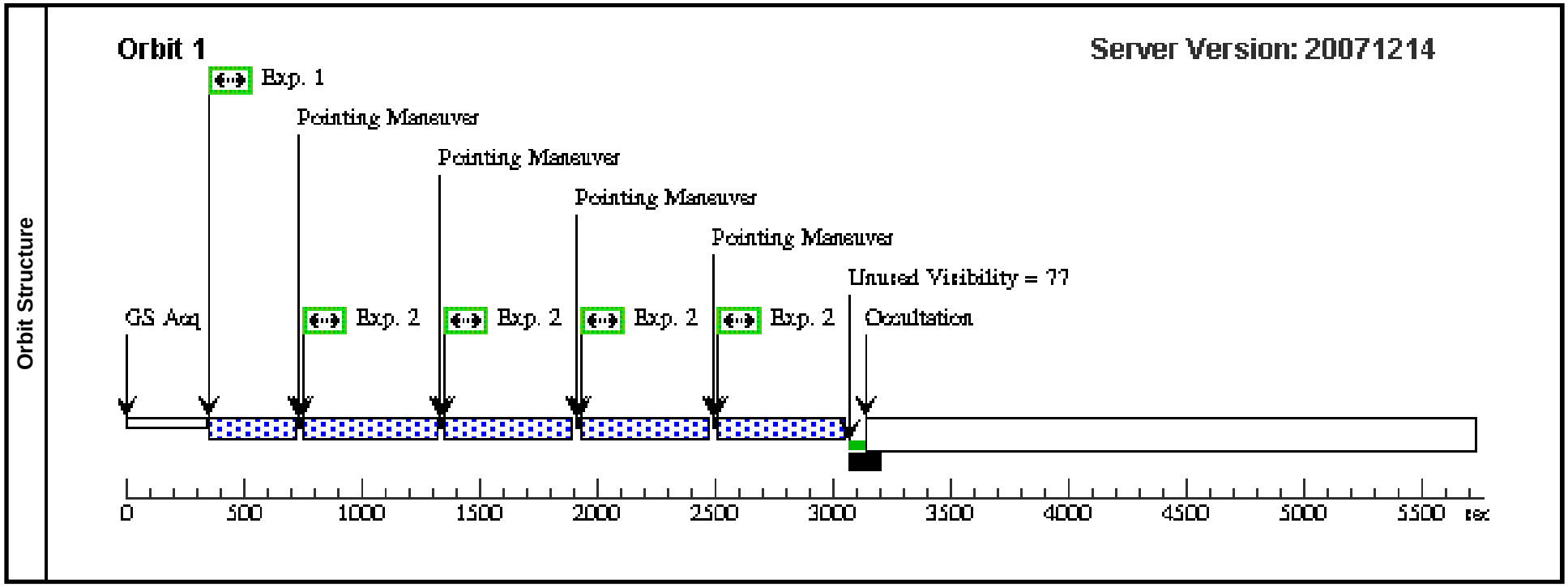
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(7)	SN2007BW Alt Name1: J171101.92+243035.9-SN	RA: 17 11 1.9900 (257.7582917d) Dec: +24 30 36.40 (24.51011d) Equinox: J2000	Redshift: 0.1039	V=19.5+/-1 E(B-V)=0.053, SURF-BKG(G)=24.0+/-0.2, F-LINE(1216)=2.4+/-1e-13, W-LINE(1216)=15.0+/-5.0	Reference Frame: ICRS

Comments: Supernova magnitude is estimated as described in Observing_Description and is for an observation on December 15, 2007 (341 days old). The supernova continuum will fade with time, however the emission line may not. The host galaxy is J171101.92+243035.9 and has a magnitude of 19.18g. The host galaxy size is ~9" x 9".

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(7) SN2007BW	ACS/SBC, ACCUM, SBC	F115LP				300.0 Secs	
								[==>300.0 Secs]	***[1]***
2		(7) SN2007BW	ACS/SBC, ACCUM, SBC	PR110L			Pattern 2-2 (2)	517 Secs	
								[==>(Pattern 1)] *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***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Server Version: 20071214
Exp. 1
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Unused Visibility = ??
GS Acq
Exp. 2
Exp. 2
Exp. 2
Exp. 2
Occultation
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Visit

Proposal 11220, Visit 08, completed Thu Feb 28 02:02:58 GMT 2008

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/SBC

Special Requirements: (none)

Patterns

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(1)	Pattern Type=ACS-SBC-MOSAIC-BOX Purpose=MOSAIC Number Of Points=4 Point Spacing=28.801 Line Spacing=32.957	Coordinate Frame=POS-TARG Pattern Orientation=90.0 Angle Between Sides=95.76 Center Pattern=true		(2)

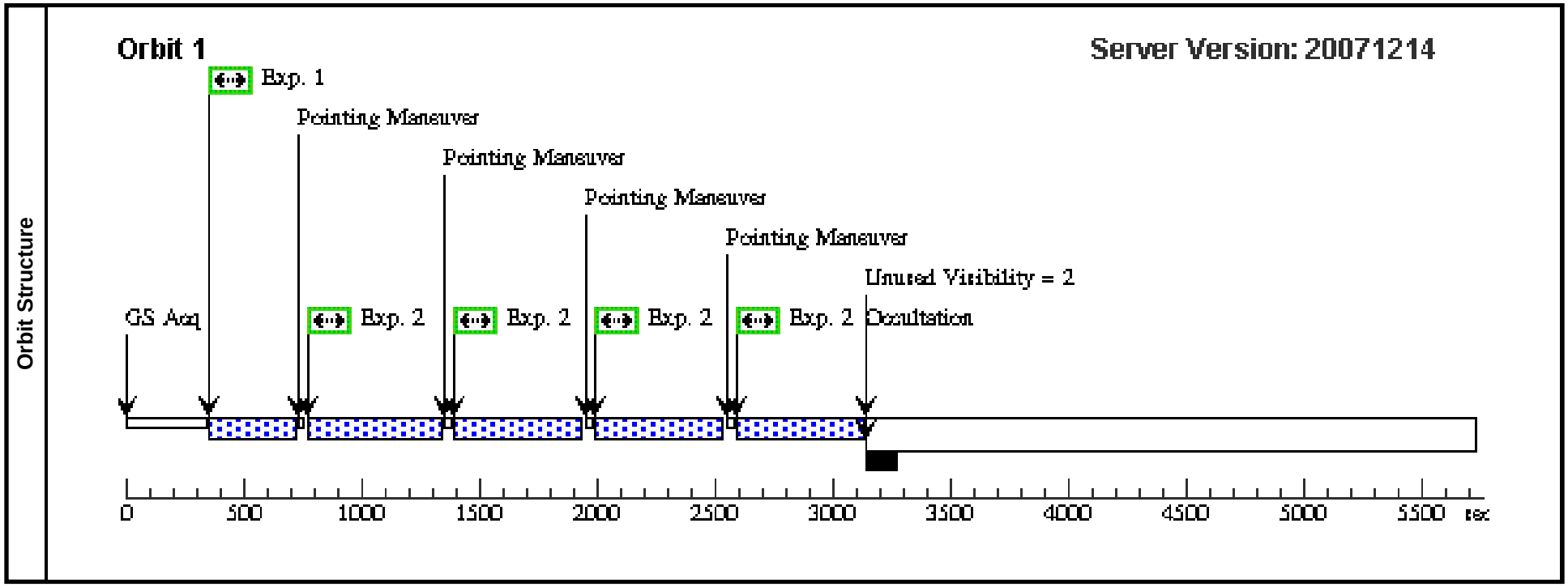
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(8)	SN2006AG Alt Name1: J120017.12+283622.0-SN	RA: 12 00 17.1200 (180.0713333d) Dec: +28 36 22.00 (28.60611d) Equinox: J2000	Redshift: 0.0493	V=21.5+/-1 E(B-V)=0.020, SURF-BKG(G)=23.5+/-0.2, F-LINE(1216)=3.0+/-1e-14, W-LINE(1216)=15.0+/-5.0	Reference Frame: ICRS

Comments: Supernova magnitude is estimated as described in Observing_Description and is for an observation on December 12, 2007 (671 days old). The supernova continuum will fade with time, however the emission line may not. The host galaxy is NSF J120017.12+283622.0 with mag 18.87g. The host galaxy size is 0.1' x 0.2' and has colors (u-g)=0.72 and (g-r)=0.03.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(8) SN2006AG	ACS/SBC, ACCUM, SBC	F115LP				300.0 Secs	
								[==>300.0 Secs]	***[1]***
2		(8) SN2006AG	ACS/SBC, ACCUM, SBC	PR110L			Pattern 2-2 (1)	1100.0 Secs	
								[==>517.0 Secs (Pattern 1)] *[==>517.0 Secs (Pattern 2)]* *[==>517.0 Secs (Pattern 3)]* *[==>517.0 Secs (Pattern 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20071214
Exp. 1
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Unused Visibility = 2
GS Acq
Exp. 2
Exp. 2
Exp. 2
Exp. 2
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec