13019 - Probing the Complicated Atmospheres of Cepheids with HST-COS: Plasma Dynamics, Shock Energetics and Heating Mechanisms

Cycle: 20, 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) V-L-CAR	COS/FUV COS/NUV	1	14-Jun-2013 21:12:56.0	yes
02	(1) V-L-CAR	COS/FUV COS/NUV	1	14-Jun-2013 21:13:10.0	yes
03	(1) V-L-CAR	COS/FUV COS/NUV	1	14-Jun-2013 21:13:23.0	yes
04	(1) V-L-CAR	COS/FUV COS/NUV	1	14-Jun-2013 21:13:34.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
05	(1) V-L-CAR	COS/FUV COS/NUV	1	14-Jun-2013 21:13:46.0	yes
06	(1) V-L-CAR	COS/FUV COS/NUV	1	14-Jun-2013 21:13:57.0	yes
07	(2) V-DEL-CEP	COS/FUV COS/NUV	1	14-Jun-2013 21:14:08.0	yes
08	(3) V-BET-DOR	COS/FUV COS/NUV	1	14-Jun-2013 21:14:19.0	yes
09	(3) V-BET-DOR	COS/FUV COS/NUV	1	14-Jun-2013 21:14:33.0	yes

9 Total Orbits Used

ABSTRACT

Classical Cepheids, although well studied in terms of their cosmologically important Period-Luminosity Law, are proving to be increasingly complex and astrophysically intriguing in terms of the atmospheric energetics. This proposal expands Cycle 17/18 programs to probe Cepheid atmospheres and understand the mechanisms by which they are heated. Our previous COS spectra revealed a wealth of 10,000-300,000K plasma emission lines (far beyond what previous IUE data show due to severe scattered light contamination), phase-locked with the Cepheid pulsation periods, indicating that a pulsation-driven heating mechanism is at work. We propose multiple observations of selected Cepheids (delta Cep, beta Dor and l Car) with HST-COS through the G130M & G160M gratings, to provide comprehensive and detailed diagnostics of the atmospheric plasmas of Cepheids with a range of periods and pulsation types, and give the best look yet at how large-scale, radial pulsations affect the upper atmospheres of supergiants. The phase constraints placed on some of the visits will allow phase-lags between the emission lines to be detailed, giving important additional information on the heating mechanism and extents of the atmospheres. Numerous emission lines are covered by the G130M and G160M wavelength range (~1150-1750A), including N V 1240, O I, C IV 1550 and He II 1640. When combined with our approved and future proposed X-ray observations of Cepheids, the HST-COS data will allow us to construct an understanding of Cepheid atmospheric plasmas with temperatures of tens of thousands to millions of degrees -- the most thorough atmospheric study to date for this important class of pulsating stars.

OBSERVING DESCRIPTION

We propose 9 HST-COS visits (1 orbit each) of 3 selected Cepheids (in the HST continuous viewing zone) to: finish work we have begun on |*| Cep and |*| Dor in Cycles 17 and 18; and expand our COS Cepheid database to include the long period l Car. We propose phase-constrained observations near |*| = 0.93 for |*| Cep and near |*| = 0.64 and 0.72 for |*| Dor, thus helping complete the phase coverage (leading to a much better understanding of what we believe to be shock propagation through the stellar atmosphere). The |*| Cep observation will occur at a very important phase just after the large-scale atmospheric infall (where a second shock could easily be initiated), and help us determine specific phase peaks of different emission species, along with line ratios and flow velocities. For |*| Dor, although our Cycle 18 observations had a good phase spread, this Cepheid shows a large phase-lag between different emission species. As a result, only the peak of N V is characterized, with all other emission lines caught sometime after maximum, preventing the true scale of their variability from being recorded. The two requested Cycle 20 observations will allow us to compare the variabilities of all emission lines in |*| Dor, along with their flow velocities. We propose 6 visits on l Car to cover the maximum emission phases we expect, based on data thus far. l Car is a very exciting target for several reasons: as by far the longest period Cepheid in this program (~35.5-day period), it is markedly different from the other targets, shows full-amplitude light and RV variability, and archival IUE data show it to have the strongest emissions of all observed Cepheids. In fact, the IUE data have also shown periodic UV variability, but the scattered light (again) overwhelmed all but the absolute strongest lines from appearing. l Car is also much larger than our other program Cepheids (~180R|*| according to Taylor et al. 1997; where |*| Dor is the next largest in the program at ~75R|*|), and the same study also found two possible shocks along the RV curve at |*| = 0.7, 0.9. The phase-constrained visits we request for l Car will occur at and around these phases. Finally, l Car is of later spectral type and will have less photospheric continuum obscuring some of the longer-wavelength lines in this study.

Visit

Proposal 13019, L Car (01), implementation Sat Jun 15 01:14:42 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: Period 35.560377 D AND ZERO-PHASE HJD2456024.2589

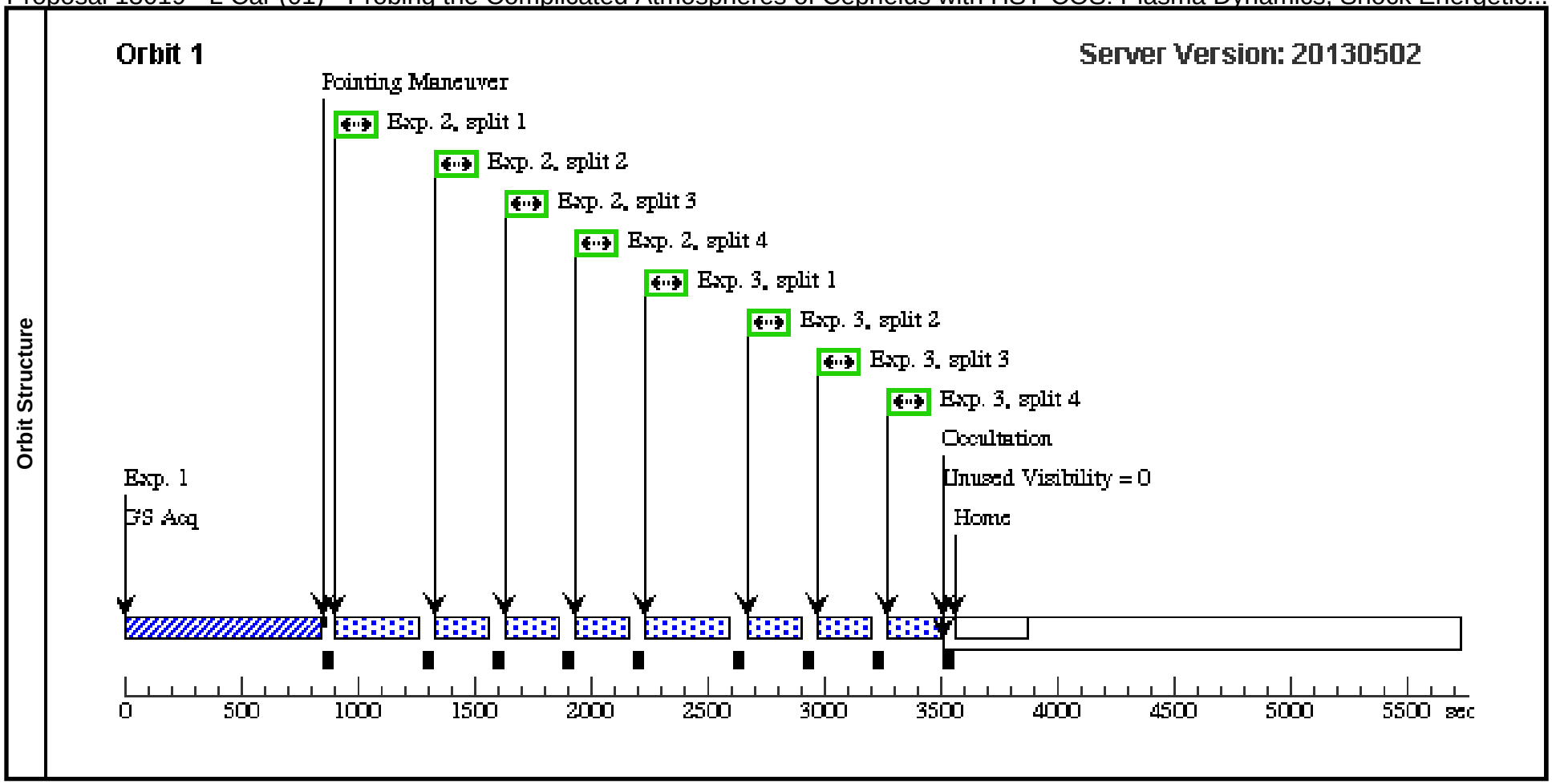
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-L-CAR	RA: 09 45 14.8112 (146.3117133d) Dec: -62 30 28.45 (-62.50790d) Equinox: J2000	Proper Motion RA: -12.88 mas/yr Proper Motion Dec: 8.19 mas/yr Parallax: 0.00201" Epoch of Position: 2000	V=3.4	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.ta.416131)	(1) V-L-CAR	COS/NUV, ACQ/IMAGE, BOA	MIRRORB		PHASE 0.92 TO 0.96		200 Secs (200 Secs) *[==>]*	 ***[1]***
2	(COS.sp.416133)	(1) V-L-CAR	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=704; FP-POS=ALL; FLASH=YES			200 Secs (704 Secs) *[==>176.0 Secs (Split 1)]* *[==>176.0 Secs (Split 2)]* *[==>176.0 Secs (Split 3)]* *[==>176.0 Secs (Split 4)]*	 ***[1]***
3	(COS.sp.416136)	(1) V-L-CAR	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=702; FLASH=YES; FP-POS=ALL			200 Secs (702 Secs) *[==>176.0 Secs (Split 1)]* *[==>176.0 Secs (Split 2)]* *[==>176.0 Secs (Split 3)]* *[==>174.0 Secs (Split 4)]*	 ***[1]***


Orbit Structure
Orbit 1
Server Version: 20130502
Pointing Maneuver
Exp. 2, split 1
Exp. 2, split 2
Exp. 2, split 3
Exp. 2, split 4
Exp. 3, split 1
Exp. 3, split 2
Exp. 3, split 3
Exp. 3, split 4
Occultation
Unused Visibility = 0
Exp. 1
GS Acq
Homc
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 13019, L Car (02), completed Sat Jun 15 01:14:44 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: Period 35.54434 D AND ZERO-PHASE HJD2447880.67

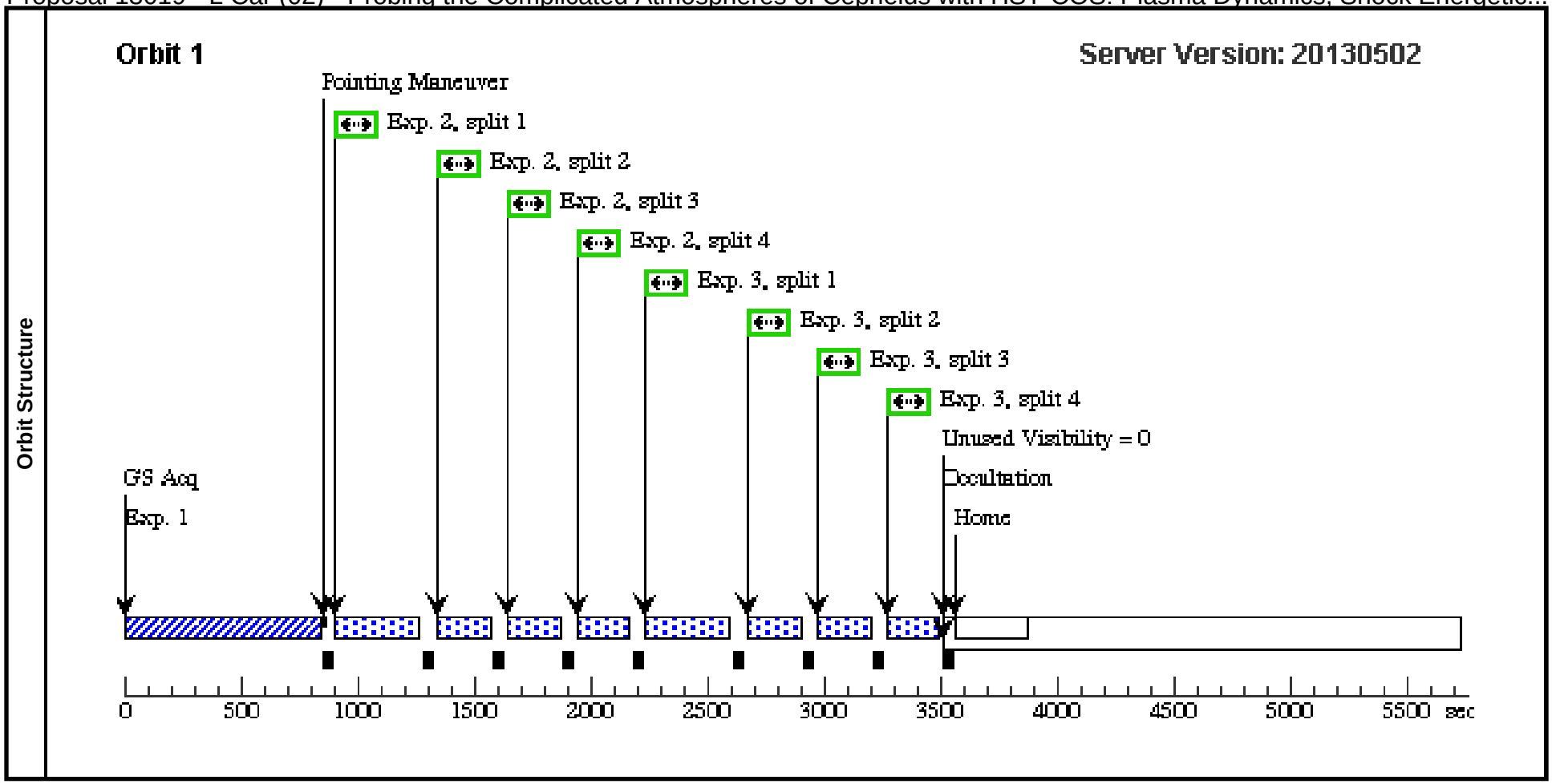
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-L-CAR	RA: 09 45 14.8112 (146.3117133d) Dec: -62 30 28.45 (-62.50790d) Equinox: J2000	Proper Motion RA: -12.88 mas/yr Proper Motion Dec: 8.19 mas/yr Parallax: 0.00201" Epoch of Position: 2000	V=3.4	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.ta.416131)	(1) V-L-CAR	COS/NUV, ACQ/IMAGE, BOA	MIRRORB		PHASE 0.9 TO 0.96		200 Secs (200 Secs) *[==>]*	 ***[1]***
2	(COS.sp.416133)	(1) V-L-CAR	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=703; FP-POS=ALL; FLASH=YES			200 Secs (703 Secs) *[==>177.0 Secs (Split 1)]* *[==>177.0 Secs (Split 2)]* *[==>177.0 Secs (Split 3)]* *[==>172.0 Secs (Split 4)]*	 ***[1]***
3	(COS.sp.416136)	(1) V-L-CAR	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=703; FLASH=YES; FP-POS=ALL			200 Secs (703 Secs) *[==>177.0 Secs (Split 1)]* *[==>177.0 Secs (Split 2)]* *[==>177.0 Secs (Split 3)]* *[==>172.0 Secs (Split 4)]*	 ***[1]***


Orbit Structure
Orbit 1
Server Version: 20130502
Pointing Maneuver
Exp. 2, split 1
Exp. 2, split 2
Exp. 2, split 3
Exp. 2, split 4
Exp. 3, split 1
Exp. 3, split 2
Exp. 3, split 3
Exp. 3, split 4
Unused Visibility = 0
Occultation
Home
GS Acq
Exp. 1
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 13019, L Car (03), completed Sat Jun 15 01:14:45 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: Period 35.54434 D AND ZERO-PHASE HJD2447880.67

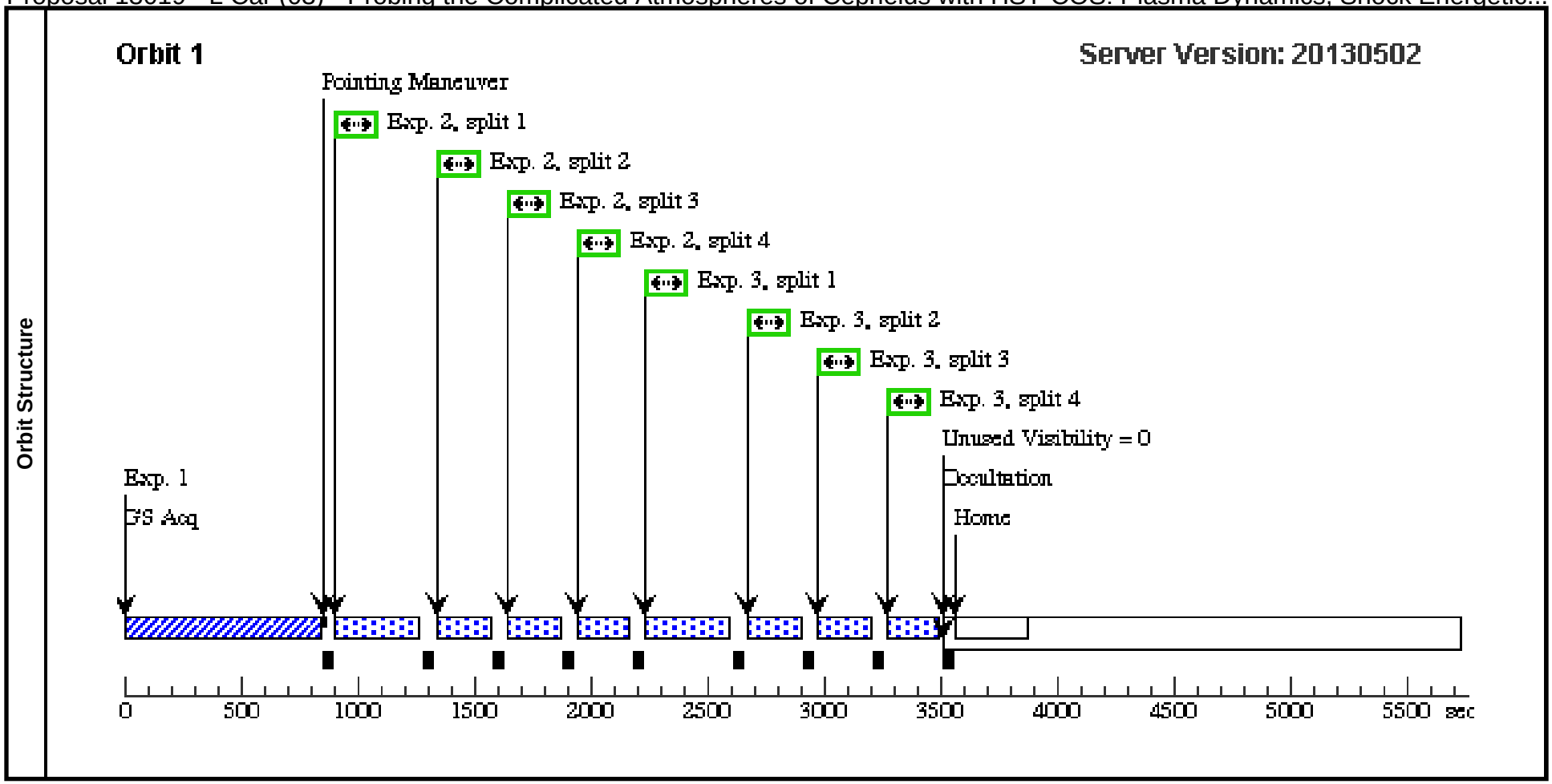
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-L-CAR	RA: 09 45 14.8112 (146.3117133d) Dec: -62 30 28.45 (-62.50790d) Equinox: J2000	Proper Motion RA: -12.88 mas/yr Proper Motion Dec: 8.19 mas/yr Parallax: 0.00201" Epoch of Position: 2000	V=3.4	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.ta.416131)	(1) V-L-CAR	COS/NUV, ACQ/IMAGE, BOA	MIRRORB		PHASE 0.98 TO 0.04		200 Secs (200 Secs) *[==>]*	 ***[1]***
2	(COS.sp.416133)	(1) V-L-CAR	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=703; FP-POS=ALL; FLASH=YES			200 Secs (703 Secs) *[==>177.0 Secs (Split 1)]* *[==>177.0 Secs (Split 2)]* *[==>177.0 Secs (Split 3)]* *[==>172.0 Secs (Split 4)]*	 ***[1]***
3	(COS.sp.416136)	(1) V-L-CAR	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=703; FLASH=YES; FP-POS=ALL			200 Secs (703 Secs) *[==>177.0 Secs (Split 1)]* *[==>177.0 Secs (Split 2)]* *[==>177.0 Secs (Split 3)]* *[==>172.0 Secs (Split 4)]*	 ***[1]***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Server Version: 20130502
Pointing Maneuver
Exp. 2, split 1
Exp. 2, split 2
Exp. 2, split 3
Exp. 2, split 4
Exp. 3, split 1
Exp. 3, split 2
Exp. 3, split 3
Exp. 3, split 4
Unused Visibility = 0
Occultation
Homc
Exp. 1
FGS Acq
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 13019, L Car (04), completed Sat Jun 15 01:14:48 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: Period 35.54434 D AND ZERO-PHASE HJD2447880.67

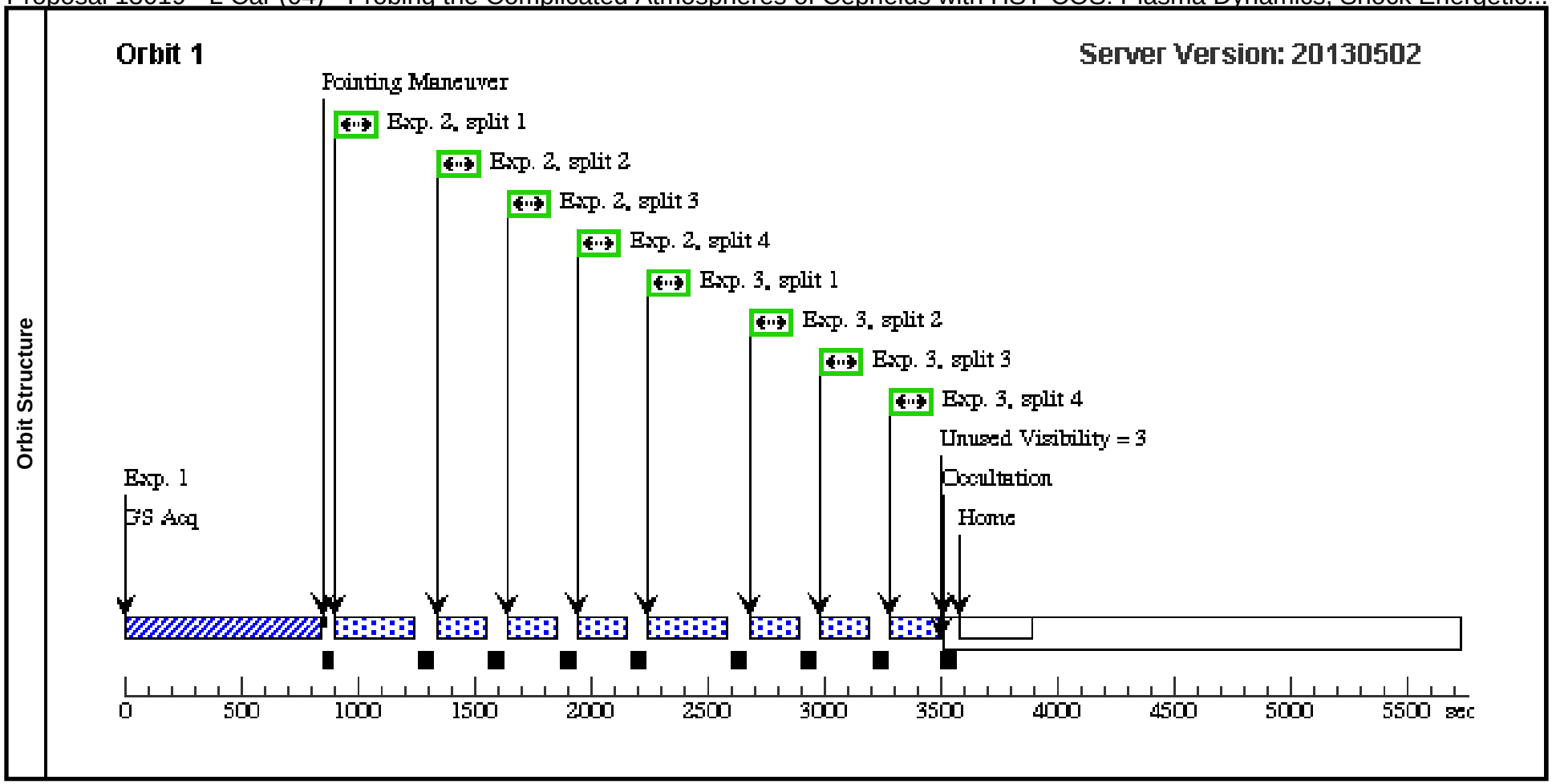
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-L-CAR	RA: 09 45 14.8112 (146.3117133d) Dec: -62 30 28.45 (-62.50790d) Equinox: J2000	Proper Motion RA: -12.88 mas/yr Proper Motion Dec: 8.19 mas/yr Parallax: 0.00201" Epoch of Position: 2000	V=3.4	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.ta.416131)	(1) V-L-CAR	COS/NUV, ACQ/IMAGE, BOA	MIRRORB		PHASE 0.07 TO 0.13		200 Secs (200 Secs) *[==>]*	 ***[1]***
2	(COS.sp.416133)	(1) V-L-CAR	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=300; FP-POS=ALL; FLASH=YES			200 Secs (635 Secs) *[==>160 Secs (Split 1)]* *[==>160 Secs (Split 2)]* *[==>160 Secs (Split 3)]* *[==>155 Secs (Split 4)]*	 ***[1]***
3	(COS.sp.416136)	(1) V-L-CAR	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=300; FLASH=YES; FP-POS=ALL			200 Secs (635 Secs) *[==>160 Secs (Split 1)]* *[==>160 Secs (Split 2)]* *[==>160 Secs (Split 3)]* *[==>155 Secs (Split 4)]*	 ***[1]***


Orbit Structure
Orbit 1
Server Version: 20130502
Pointing Maneuver
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Exp. 2, split 2
Exp. 2, split 3
Exp. 2, split 4
Exp. 3, split 1
Exp. 3, split 2
Exp. 3, split 3
Exp. 3, split 4
Unused Visibility = 3
Occultation
Home
Exp. 1
GS Acq
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 13019, L Car (05), completed Sat Jun 15 01:14:49 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: Period 35.54434 D AND ZERO-PHASE HJD2447880.67

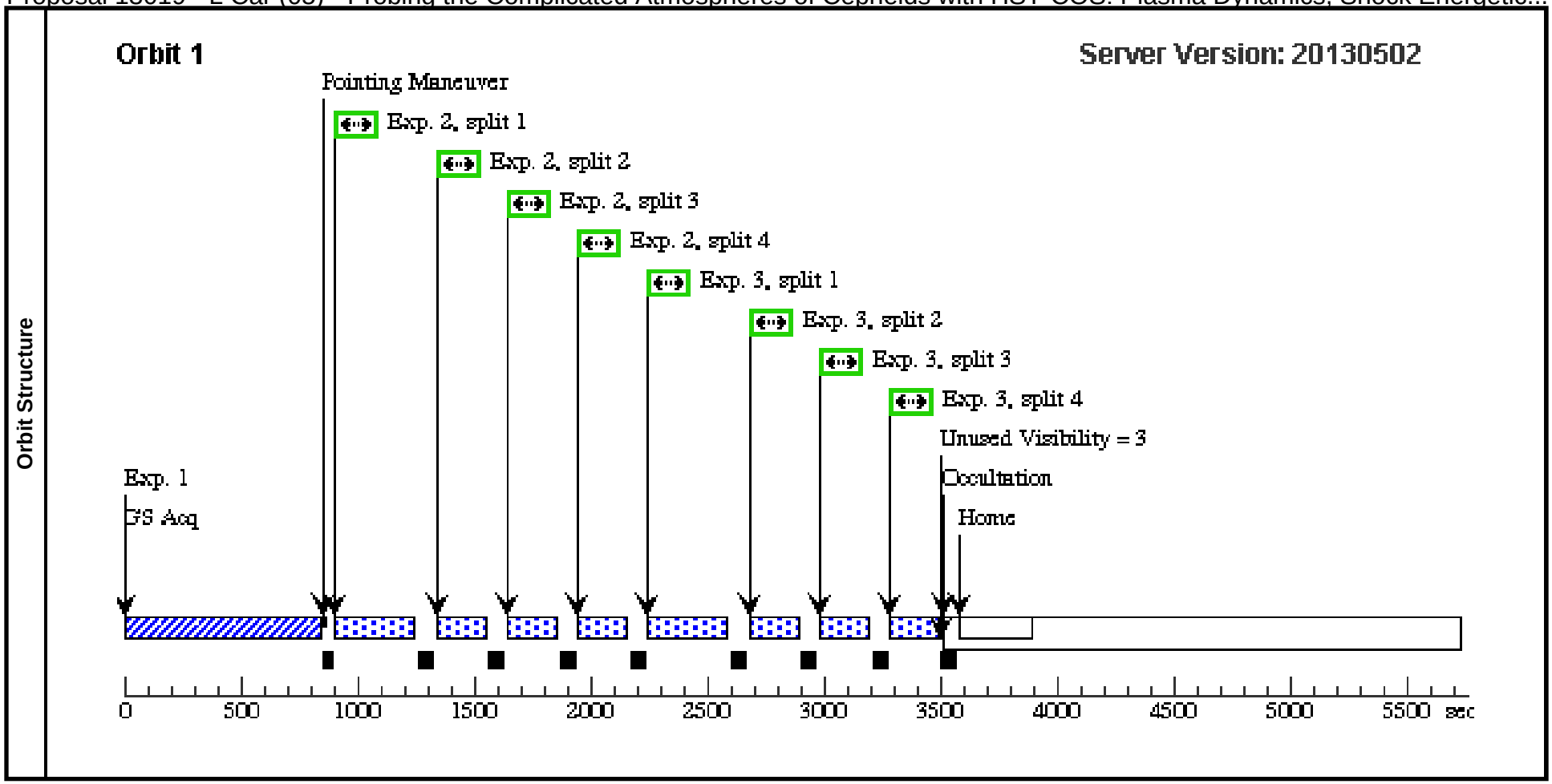
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-L-CAR	RA: 09 45 14.8112 (146.3117133d) Dec: -62 30 28.45 (-62.50790d) Equinox: J2000	Proper Motion RA: -12.88 mas/yr Proper Motion Dec: 8.19 mas/yr Parallax: 0.00201" Epoch of Position: 2000	V=3.4	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.ta.416131)	(1) V-L-CAR	COS/NUV, ACQ/IMAGE, BOA	MIRRORB		PHASE 0.17 TO 0.23		200 Secs (200 Secs) *[==>]*	 ***[1]***
2	(COS.sp.416133)	(1) V-L-CAR	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=300; FP-POS=ALL; FLASH=YES			200 Secs (635 Secs) *[==>160 Secs (Split 1)]* *[==>160 Secs (Split 2)]* *[==>160 Secs (Split 3)]* *[==>155 Secs (Split 4)]*	 ***[1]***
3	(COS.sp.416136)	(1) V-L-CAR	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=300; FLASH=YES; FP-POS=ALL			200 Secs (635 Secs) *[==>160 Secs (Split 1)]* *[==>160 Secs (Split 2)]* *[==>160 Secs (Split 3)]* *[==>155 Secs (Split 4)]*	 ***[1]***


Orbit Structure
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Server Version: 20130502
Pointing Maneuver
Exp. 2, split 1
Exp. 2, split 2
Exp. 2, split 3
Exp. 2, split 4
Exp. 3, split 1
Exp. 3, split 2
Exp. 3, split 3
Exp. 3, split 4
Unused Visibility = 3
Occultation
Home
Exp. 1
FGS Acq
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 13019, L Car (06), completed Sat Jun 15 01:14:50 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: Period 35.54434 D AND ZERO-PHASE HJD2447880.67

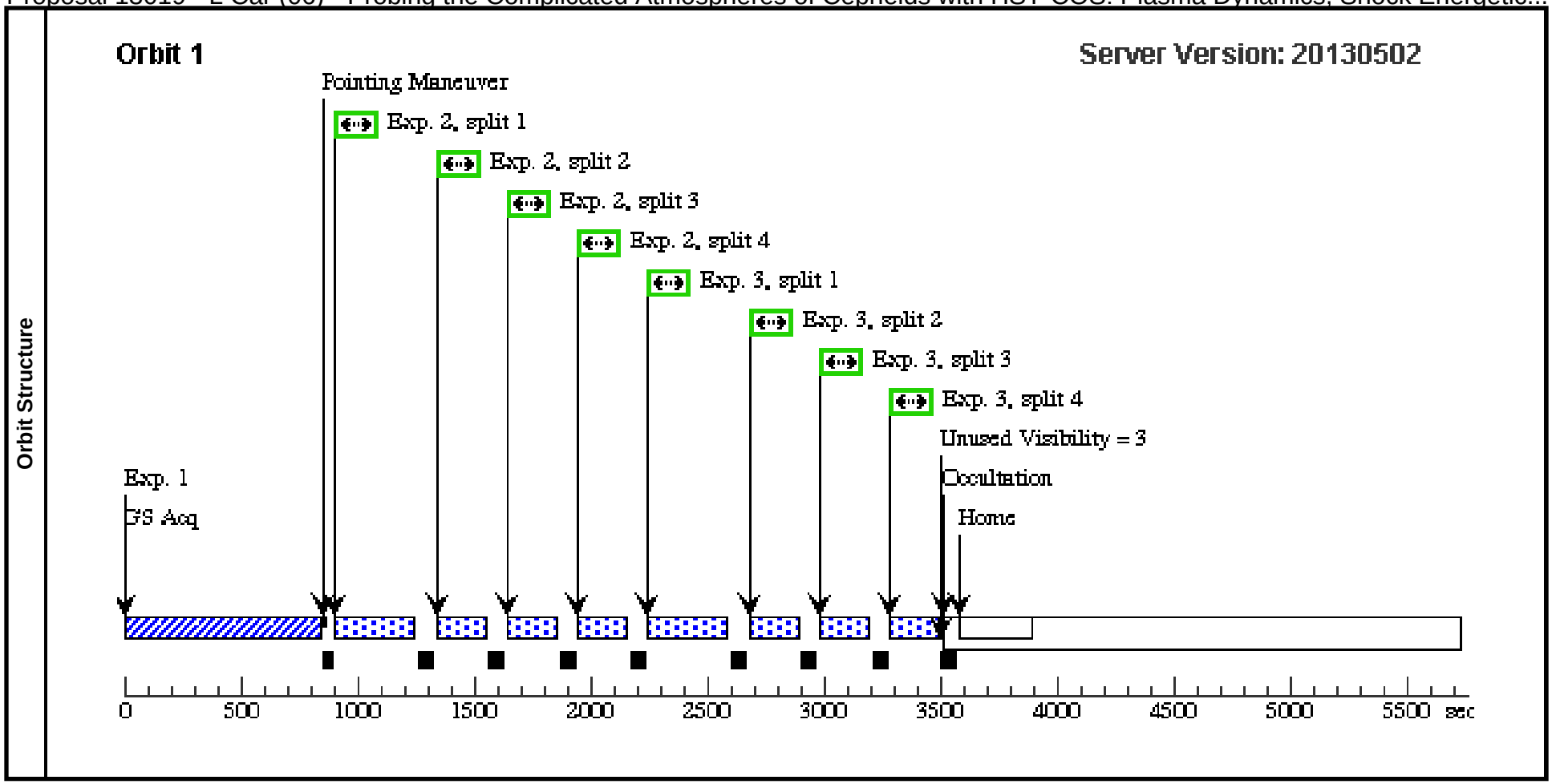
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-L-CAR	RA: 09 45 14.8112 (146.3117133d) Dec: -62 30 28.45 (-62.50790d) Equinox: J2000	Proper Motion RA: -12.88 mas/yr Proper Motion Dec: 8.19 mas/yr Parallax: 0.00201" Epoch of Position: 2000	V=3.4	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.ta.416131)	(1) V-L-CAR	COS/NUV, ACQ/IMAGE, BOA	MIRRORB		PHASE 0.6 TO 0.8		200 Secs (200 Secs) *[==>]*	 ***[1]***
2	(COS.sp.416133)	(1) V-L-CAR	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=300; FP-POS=ALL; FLASH=YES			200 Secs (635 Secs) *[==>160 Secs (Split 1)]* *[==>160 Secs (Split 2)]* *[==>160 Secs (Split 3)]* *[==>155 Secs (Split 4)]*	 ***[1]***
3	(COS.sp.416136)	(1) V-L-CAR	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=300; FLASH=YES; FP-POS=ALL			200 Secs (635 Secs) *[==>160 Secs (Split 1)]* *[==>160 Secs (Split 2)]* *[==>160 Secs (Split 3)]* *[==>155 Secs (Split 4)]*	 ***[1]***


Orbit 1
Server Version: 20130502
Orbit Structure
Pointing Maneuver
Exp. 2, split 1
Exp. 2, split 2
Exp. 2, split 3
Exp. 2, split 4
Exp. 3, split 1
Exp. 3, split 2
Exp. 3, split 3
Exp. 3, split 4
Unused Visibility = 3
Occultation
Home
Exp. 1
GS Acq
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 13019, delta Cep (07), completed Sat Jun 15 01:14:51 GMT 2013

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: Period 5.366341 D AND ZERO-PHASE HJD2450102.86

Diagnostics

(Exposure 2 (delta Cep (07))) Warning (Form): Sensitive exposures should have an ETC run number provided.

(Exposure 3 (delta Cep (07))) Warning (Form): Sensitive exposures should have an ETC run number provided.

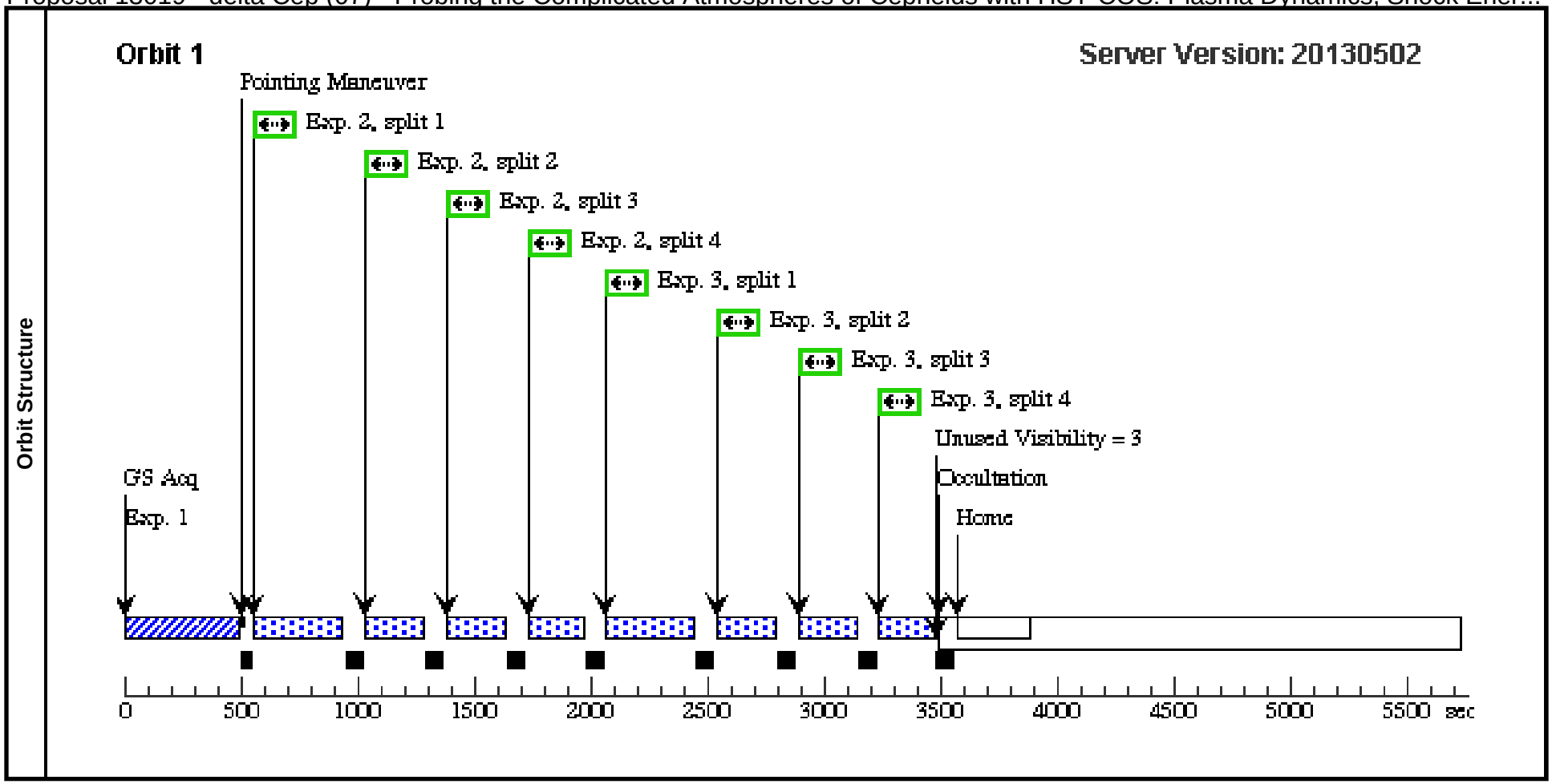
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	V-DEL-CEP	RA: 22 29 10.2650 (337.2927708d) Dec: +58 24 54.71 (58.41520d) Equinox: J2000	Proper Motion RA: 15.35 mas/yr Proper Motion Dec: 3.52 mas/yr Parallax: 0.00377" Epoch of Position: 2000	V=4.07	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.ta.416 208)	(2) V-DEL-CEP	COS/NUV, ACQ/IMAGE, BOA	MIRRORB		PHASE 0.9 TO 0.96		25 Secs (25 Secs) *[==>]*	*[1]*
2		(2) V-DEL-CEP	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=300; FLASH=YES; FP-POS=ALL			194 Secs (767 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>185.0 Secs (Split 4)]*	*[1]*
3		(2) V-DEL-CEP	COS/FUV, TIME-TAG, PSA	G160M 1589 A	BUFFER-TIME=300; FLASH=YES; FP-POS=ALL			193 Secs (763 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>184.0 Secs (Split 4)]*	*[1]*


Orbit Structure
Orbit 1
Server Version: 20130502
Pointing Maneuver
Exp. 2, split 1
Exp. 2, split 2
Exp. 2, split 3
Exp. 2, split 4
Exp. 3, split 1
Exp. 3, split 2
Exp. 3, split 3
Exp. 3, split 4
Unused Visibility = 3
Occultation
Home
GS Acq
Exp. 1
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 13019, beta Dor (08), scheduling Sat Jun 15 01:14:52 GMT 2013

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: Period 9.84262 D AND ZERO-PHASE HJD2451643.54

Diagnostics

(Exposure 2 (beta Dor (08))) Warning (Form): Sensitive exposures should have an ETC run number provided.

(Exposure 3 (beta Dor (08))) Warning (Form): Sensitive exposures should have an ETC run number provided.

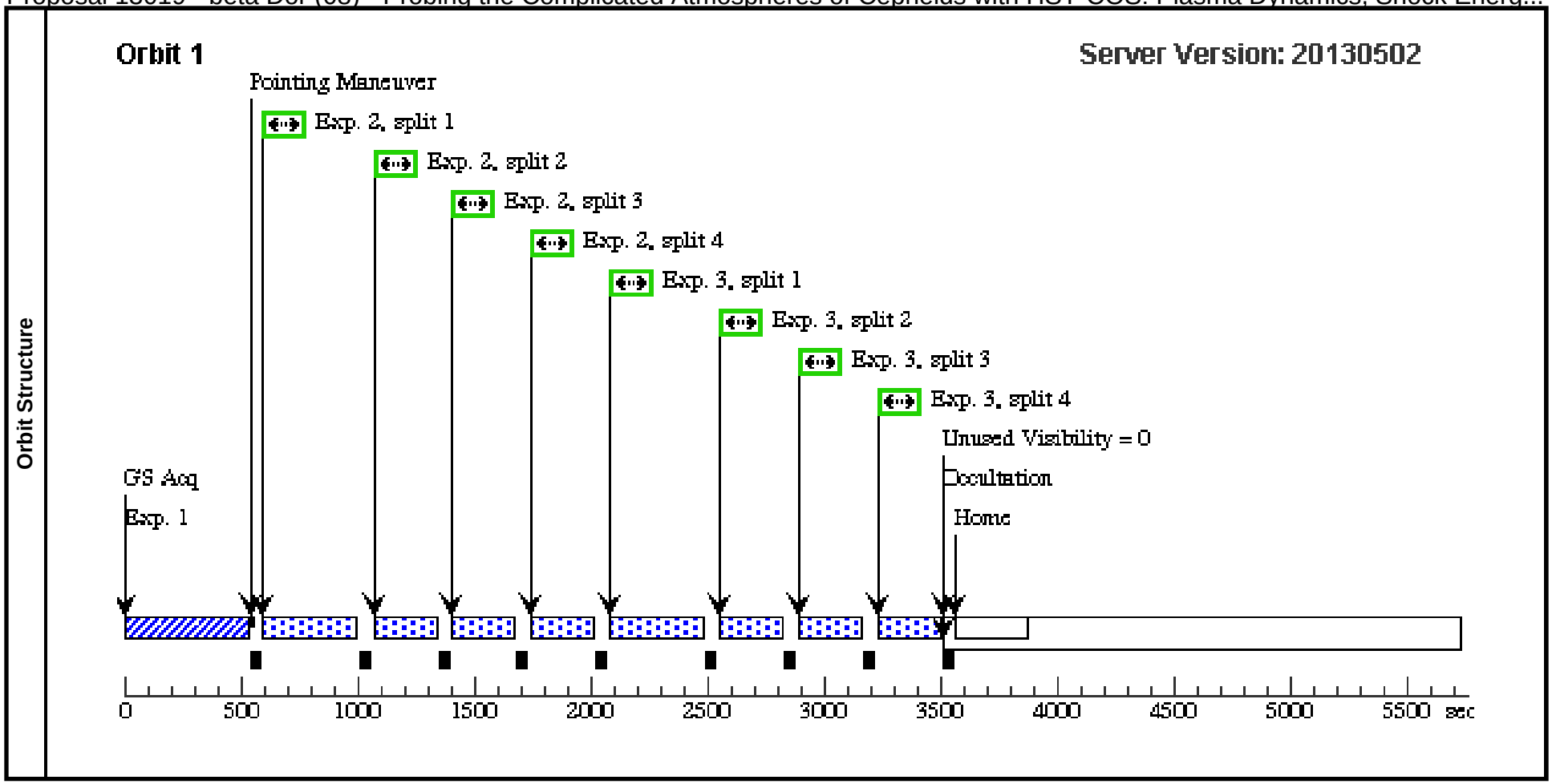
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	V-BET-DOR	RA: 05 33 37.5173 (83.4063221d) Dec: -62 29 23.37 (-62.48982d) Equinox: J2000	Proper Motion RA: 0.79 mas/yr Proper Motion Dec: 12.74 mas/yr Parallax: 0.00314" Epoch of Position: 2000	V=3.77	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.ta.416 206)	(3) V-BET-DOR	COS/NUV, ACQ/IMAGE, BOA	MIRRORB		PHASE 0.6 TO 0.66		45 Secs (45 Secs) *[==>]*	*[1]*
2		(3) V-BET-DOR	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=858; FLASH=YES; FP-POS=ALL			193 Secs (858 Secs) *[==>218.0 Secs (Split 1)]* *[==>214.0 Secs (Split 2)]* *[==>213.0 Secs (Split 3)]* *[==>213.0 Secs (Split 4)]*	*[1]*
3		(3) V-BET-DOR	COS/FUV, TIME-TAG, PSA	G160M 1589 A	BUFFER-TIME=858; FLASH=YES; FP-POS=ALL			193 Secs (858 Secs) *[==>218.0 Secs (Split 1)]* *[==>214.0 Secs (Split 2)]* *[==>213.0 Secs (Split 3)]* *[==>213.0 Secs (Split 4)]*	*[1]*


Orbit Structure
Orbit 1
Server Version: 20130502
Pointing Maneuver
Exp. 2, split 1
Exp. 2, split 2
Exp. 2, split 3
Exp. 2, split 4
Exp. 3, split 1
Exp. 3, split 2
Exp. 3, split 3
Exp. 3, split 4
Unused Visibility = 0
Occultation
Homc
GS Acq
Exp. 1
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 13019, beta Dor (09), scheduled Sat Jun 15 01:14:53 GMT 2013

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: Period 9.84262 D AND ZERO-PHASE HJD2451643.54

Diagnostics

(Exposure 2 (beta Dor (09))) Warning (Form): Sensitive exposures should have an ETC run number provided.

(Exposure 3 (beta Dor (09))) Warning (Form): Sensitive exposures should have an ETC run number provided.

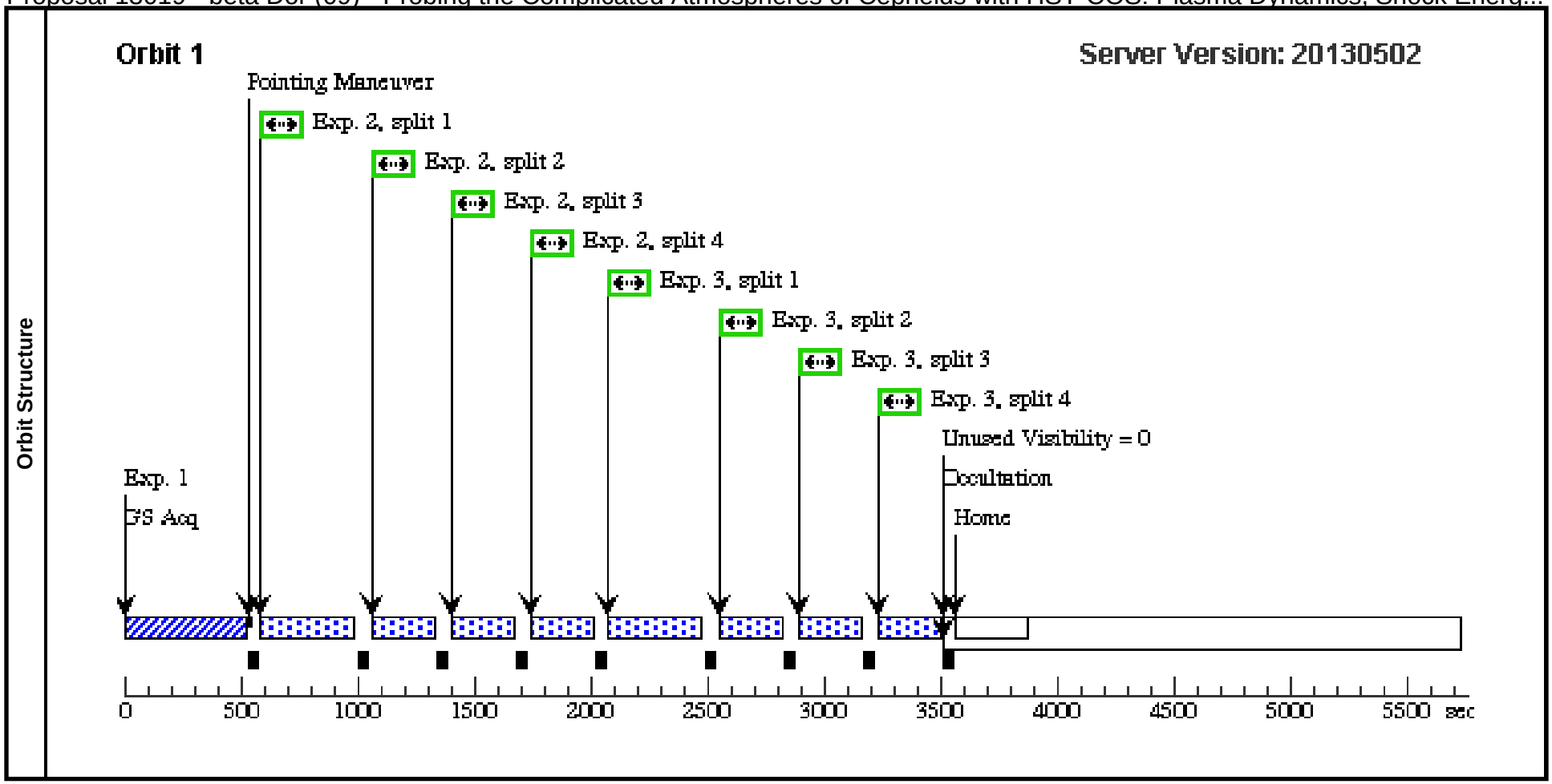
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	V-BET-DOR	RA: 05 33 37.5173 (83.4063221d) Dec: -62 29 23.37 (-62.48982d) Equinox: J2000	Proper Motion RA: 0.79 mas/yr Proper Motion Dec: 12.74 mas/yr Parallax: 0.00314" Epoch of Position: 2000	V=3.77	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.ta.416 206)	(3) V-BET-DOR	COS/NUV, ACQ/IMAGE, BOA	MIRRORB		PHASE 0.68 TO 0.74		40 Secs (40 Secs) *[==>]*	*[1]*
2		(3) V-BET-DOR	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=858; FLASH=YES; FP-POS=ALL			193 Secs (863 Secs) *[==>218.0 Secs (Split 1)]* *[==>218.0 Secs (Split 2)]* *[==>214.0 Secs (Split 3)]* *[==>213.0 Secs (Split 4)]*	*[1]*
3		(3) V-BET-DOR	COS/FUV, TIME-TAG, PSA	G160M 1589 A	BUFFER-TIME=858; FLASH=YES; FP-POS=ALL			193 Secs (863 Secs) *[==>218.0 Secs (Split 1)]* *[==>218.0 Secs (Split 2)]* *[==>214.0 Secs (Split 3)]* *[==>213.0 Secs (Split 4)]*	*[1]*


Orbit Structure
Orbit 1
Server Version: 20130502
Pointing Maneuver
Exp. 2, split 1
Exp. 2, split 2
Exp. 2, split 3
Exp. 2, split 4
Exp. 3, split 1
Exp. 3, split 2
Exp. 3, split 3
Exp. 3, split 4
Unused Visibility = 0
Occultation
Homc
Exp. 1
FGS Acq
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec