12081 - COS Flux Calibration Below 1150 Angstroms with G140L/1280

Cycle: 17, Proposal Category: CAL/COS

(Availability Mode: RESTRICTED)

INVESTIGATORS

Name	*Institution*	*E-Mail*
Dr. Derck L. Massa (PI)	**Space Telescope Science Institute**	**massa@stsci.edu**
Dr. Steven V. Penton (CoI)	University of Colorado at Boulder	Steven.Penton@colorado.edu
Dr. Steven Osterman (CoI)	University of Colorado at Boulder	
Dr. Ralph Bohlin (CoI)	Space Telescope Science Institute	bohlin@stsci.edu
Dr. Pierre Chayer (CoI)	The Johns Hopkins University	chayer@pha.jhu.edu

VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) GD50	COS/FUV COS/NUV	3	16-Apr-2010 21:39:52.0	yes

3 Total Orbits Used

ABSTRACT

We currently have a fairly accurate (10%) estimate of the G140L FUVB FUV sensitivity. This is based on low S/N data of a faint standard star and a set of relatively high S/N spectra of a bright wd which cannot be accurately modelled. The former have an accuracy worse than 20%, and the latter had to rely on FUSE absolute fluxes, which are only good to about 10%. Since this setting is now available to GOs, we should obtain an accurate (2-3%) charaterization of the FUV G140L sensitivity. To do this, we intend to observe the hot wd GD50. This star has high S/N IUE, FUSE and EUVE observations. Further, it has been observed from the ground and its atmospheric parameters are reasonably well determined. Both Pierre Chayer and Ralph Bolhin have agreed to produce the models needed to use it as a high quality FUV flux calibration source. In addition, the existance a good

GD50 EUVE spectrum means that the same observations can be used to characterize the EUV sensitivity to 10% accuracy, if estimates of the COS EUV sensitivity are correct.

OBSERVING DESCRIPTION

GD 50 was selected for observaiton because it is the the brightest EUVE source that is faint enough to be observed with COS.

We will obtain G140L CENWAVE=1230 FP-POS=4 observations to place as much of the long wavelength flux off of the FUVB as possible. FUVA must be off, since COS is much more sensitive at those wavelengths and GD 50 would be over bright there.

Ninety minutes of observing time is required to obtain a S/N = 50/1 for a 20 pixel bin -- appropriate for accurate flux calibration. Three orbits gives about 93 min of time on target.

FUVA must be off.. ETC COS.A287428 shows that the source flux 1150 and shortward violates the local count rate limit of 7.0 by 10% (0.769). However, since this occurs at 1150, where the target is well calibrated, this should not be a concern.

Will use FP-POS positions to minimize fixed pattern noise, which is unknown in this region of the FUVB. Moving to longer wavelengths onto the detector should not be an issue since the maximum count rate is expected to occur near 1155.

CALIBRATION JUSTIFICATION

Measure the COS FUV (900 - 1150Ang) G140L sensitivity to 2% and obtain a rough measure of its EUV (300-700) sensitivity. This S/N can be obtained over 20 pixel bins using FP-POS observartions of 90 min or longer -- the proposed program has 93 min of exposures.

Visit

Proposal 12081, Visit 01, implementation Sat Apr 17 01:39:59 GMT 2010

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: SCHED 90%

Comments: FUVA must be off.. ETC COS.A287428 shows that the source flux 1150 and shortward violates the local count rate limit of 7.0 by 10% (0.769). However, since this occurs at 1150, where the target is well calibrated, this shyould not be a concern.

Will use FP-POS positions to minimize fixed pattern noise, which is unknown in this region of the FUVB. Moving longer wavelengths onto the detector should not be an issue since the maximum count rate is expected to occur at 1155.

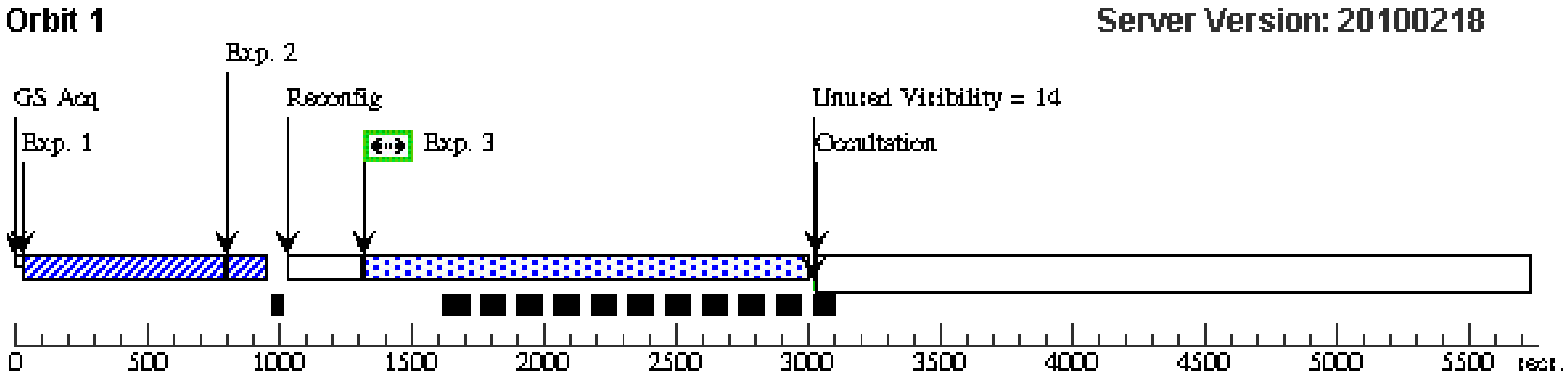
Fixed Targets

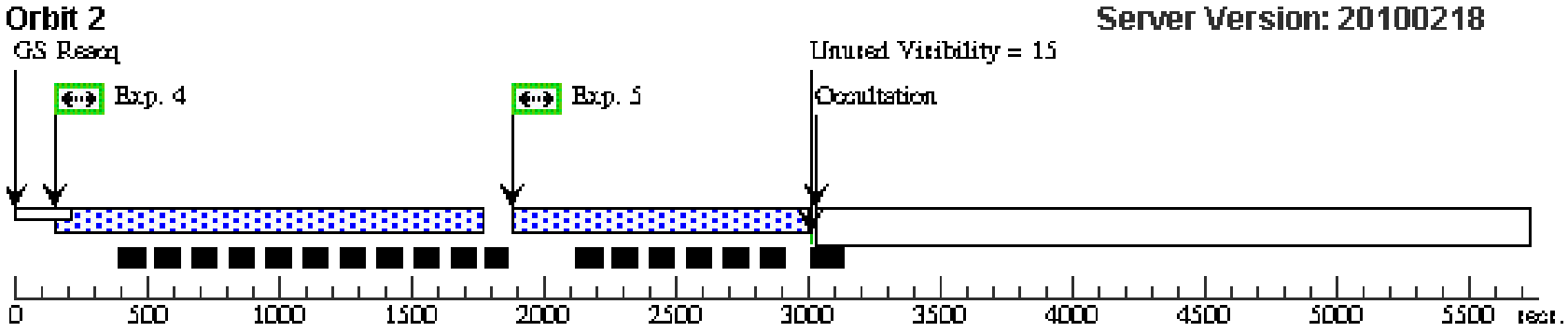
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	GD50	RA: 03 48 50.2000 (57.2091667d) Dec: -00 58 31.20 (-.97533d) Equinox: J2000	Proper Motion RA: 0.0043s/yr Proper Motion Dec: -0.1610"/yr Epoch of Position: 2000	V=13.98+/-0.01	Reference Frame: ICRS

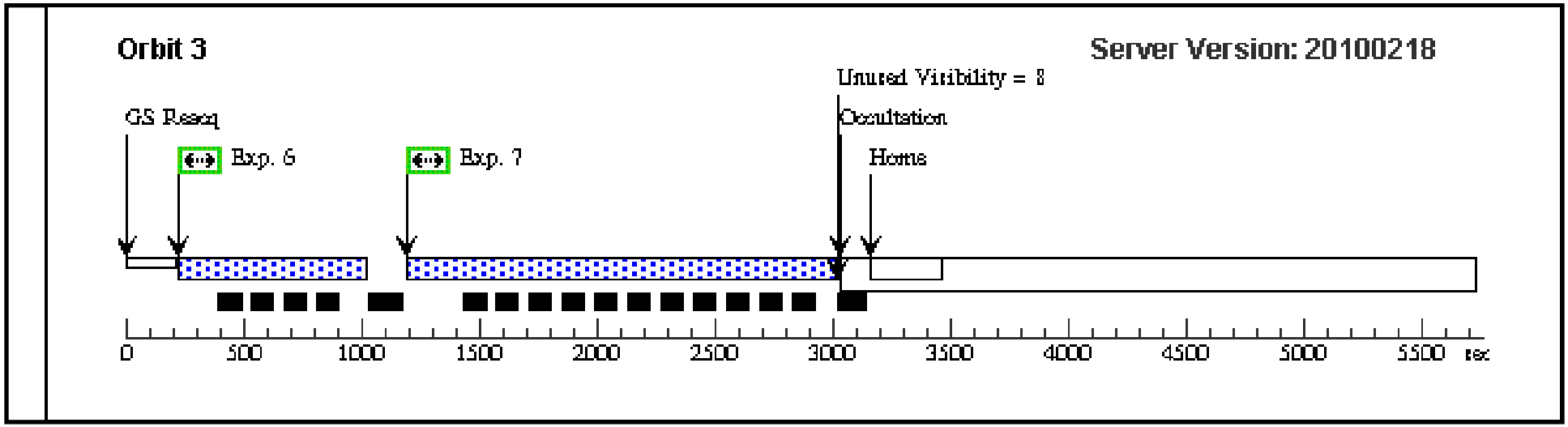
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(1) GD50	COS/NUV, ACQ/SEARCH, BOA	MIRRORA	SCAN-SIZE=3; STEP-SIZE=1.767			20 Secs *[==>]*	 ***[1]***
2		(1) GD50	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				20 Secs *[==>]*	 ***[1]***
3		(1) GD50	COS/FUV, TIME-TAG, PSA	G140L 1280 A	SEGMENT=B; FLASH=YES; FP-POS=4; BUFFER-TIME=140			1500 Secs *[==>]*	 ***[1]***
4		(1) GD50	COS/FUV, TIME-TAG, PSA	G140L 1280 A	SEGMENT=B; FLASH=YES; FP-POS=3; BUFFER-TIME=140			1500 Secs *[==>]*	 ***[2]***
5		(1) GD50	COS/FUV, TIME-TAG, PSA	G140L 1280 A	FLASH=YES; SEGMENT=B; FP-POS=2; BUFFER-TIME=140			1000 Secs *[==>]*	 ***[2]***
6		(1) GD50	COS/FUV, TIME-TAG, PSA	G140L 1280 A	FLASH=YES; SEGMENT=B; FP-POS=2; BUFFER-TIME=140			750 Secs *[==>]*	 ***[3]***
7		(1) GD50	COS/FUV, TIME-TAG, PSA	G140L 1280 A	SEGMENT=B; BUFFER-TIME=140; FLASH=YES; FP-POS=1			1700 Secs *[==>]*	 ***[3]***

Orbit Structure






Orbit 3
Server Version: 20100218
Unused Visibility = 8
GS Reacq
Occultation
Exp. 6
Exp. 7
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec