



## 12086 - Generation of 1-D Fixed Pattern Templates

Cycle: 17, Proposal Category: CAL/COS

(Availability Mode: RESTRICTED)

### INVESTIGATORS

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### VISITS

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
01	(1) WD0320-539	COS/FUV	4	21-Apr-2010 21:52:04.0	yes
02	(2) WD1057+719	COS/FUV COS/NUV	4	21-Apr-2010 21:52:27.0	yes
03	(3) WD0615-59	COS/FUV COS/NUV	3	21-Apr-2010 21:52:40.0	yes

11 Total Orbits Used

### ABSTRACT

Tests have shown that application of a 1-D fixed pattern template to a COS spectrum can reduce the fixed pattern noise in G130M or G160M spectra to an equivalent S/N of about 30/1. For this to occur, the template must be derived from data for the same grating and nearly the same central wavelength as the observation. This is because each grating has a different cross dispersion profile, and different central wavelengths fall at different cross dispersion detector locations. As a result, spectra obtained at each grating and central wavelength setting are derived from different regions of the detectors -- each with their own, unique detector features and grid wire shadows.

### **OBSERVING DESCRIPTION**

The high S/N spectra obtained in Program 11494 produced reliable templates for one G160M (CENWAVE=1600) and one G130M (CENWAVE=1309) setting. These settings fall at the mid-points of the cross dispersion pixel ranges covered by the different CENWAVE settings for each grating. To span all of the cross dispersion positions encompassed by the nominal grating positions (about 3 pixels for the FUVB and 2.5 for FUVB), we must obtain data for the extreme settings: CENWAVE=1577 and 1623 for the G160M, and CENWAVE = 1291 and 1327 for the G130M. Together with the existing data, the new observations will provide a large enough set of 1-D templates to insure that there will be a template within half of a cross dispersion pixel of observations at the nominal CENWAVE settings. In this way, errors introduced by interpolating the available templates to the observed cross dispersion location will be minimal.

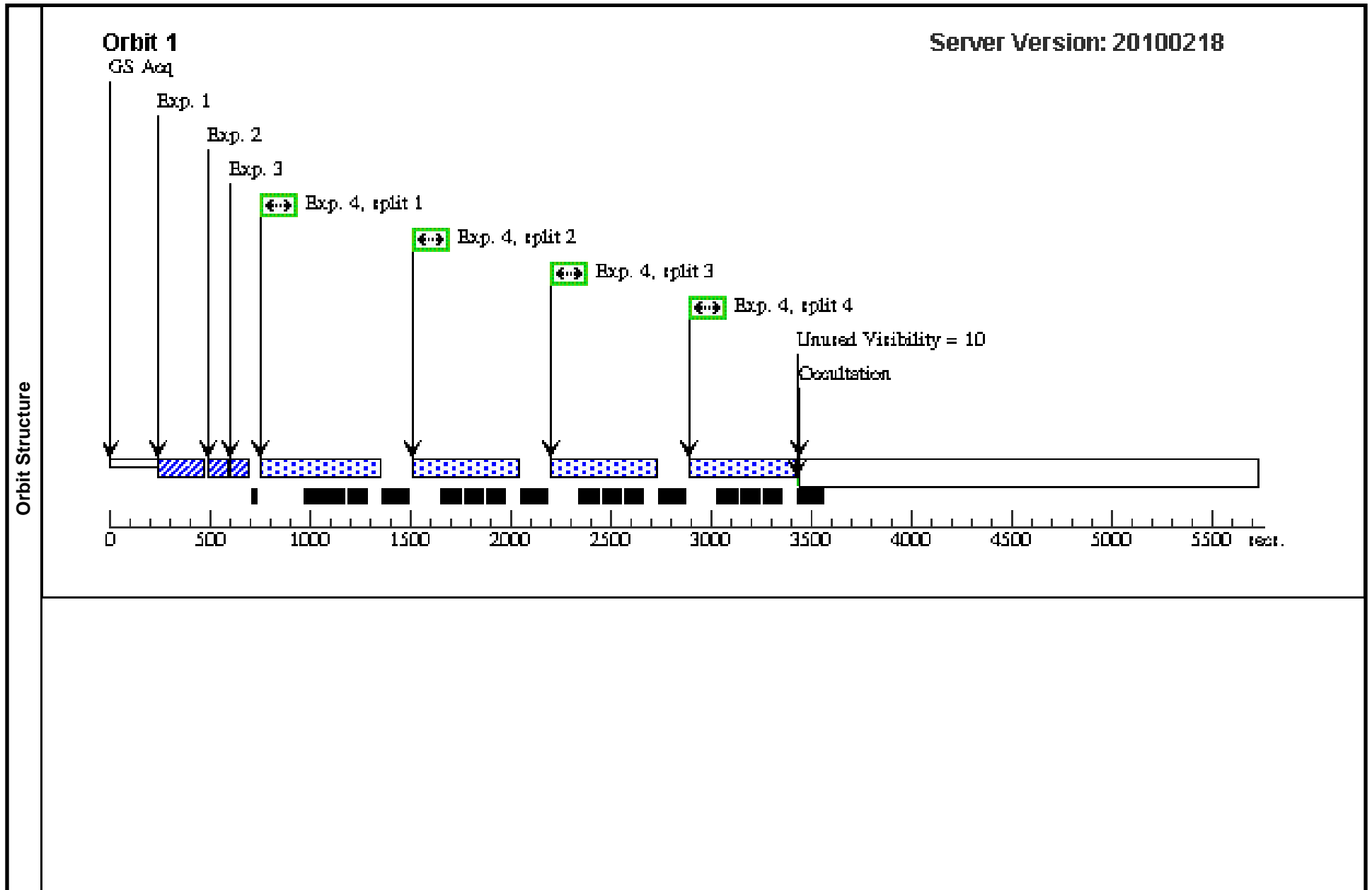
### **CALIBRATION JUSTIFICATION**

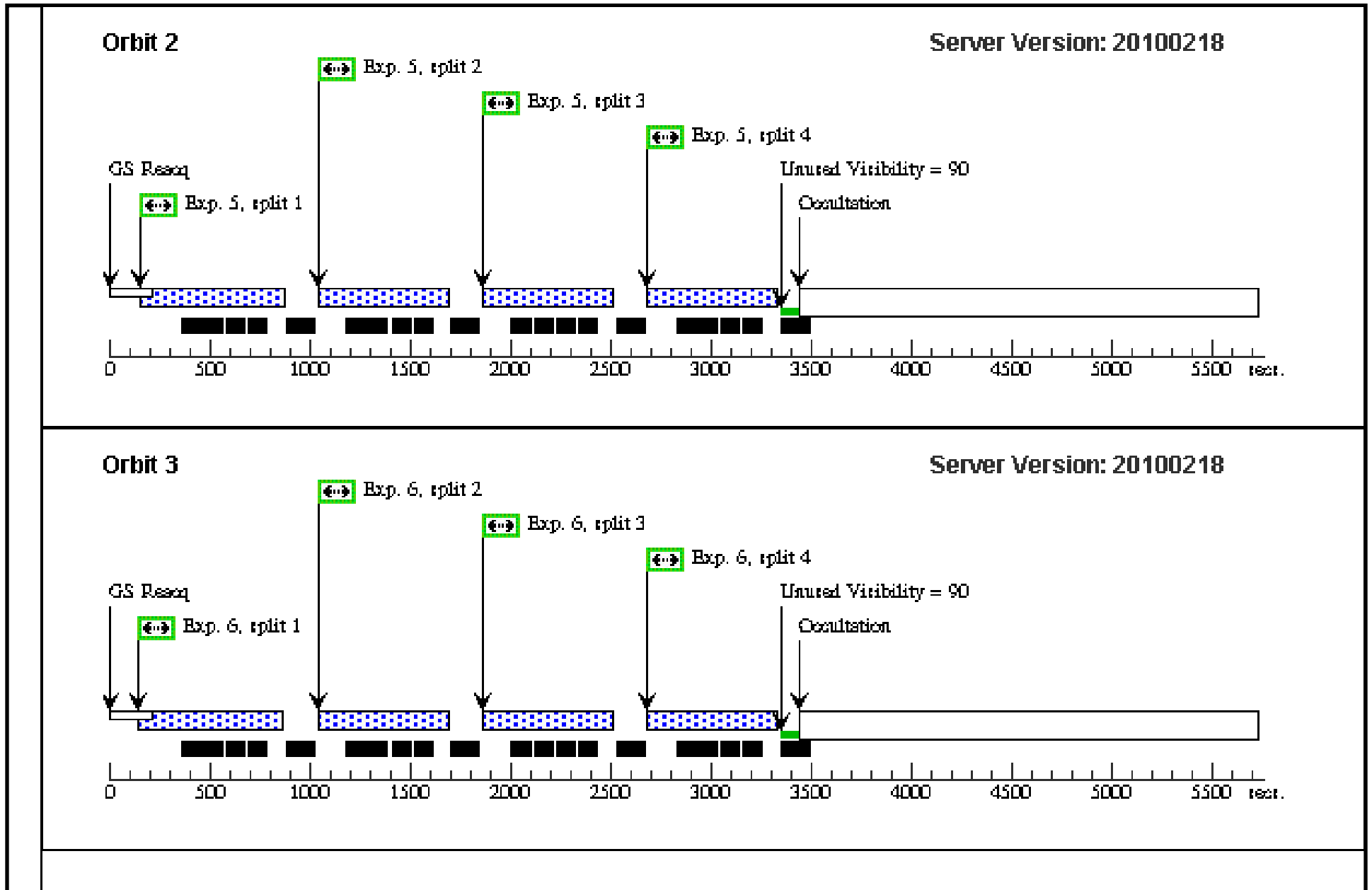
Obtain the data needed to construct 1-D fixed pattern templates to correct the grid wire shadows and detector features in COS spectra.

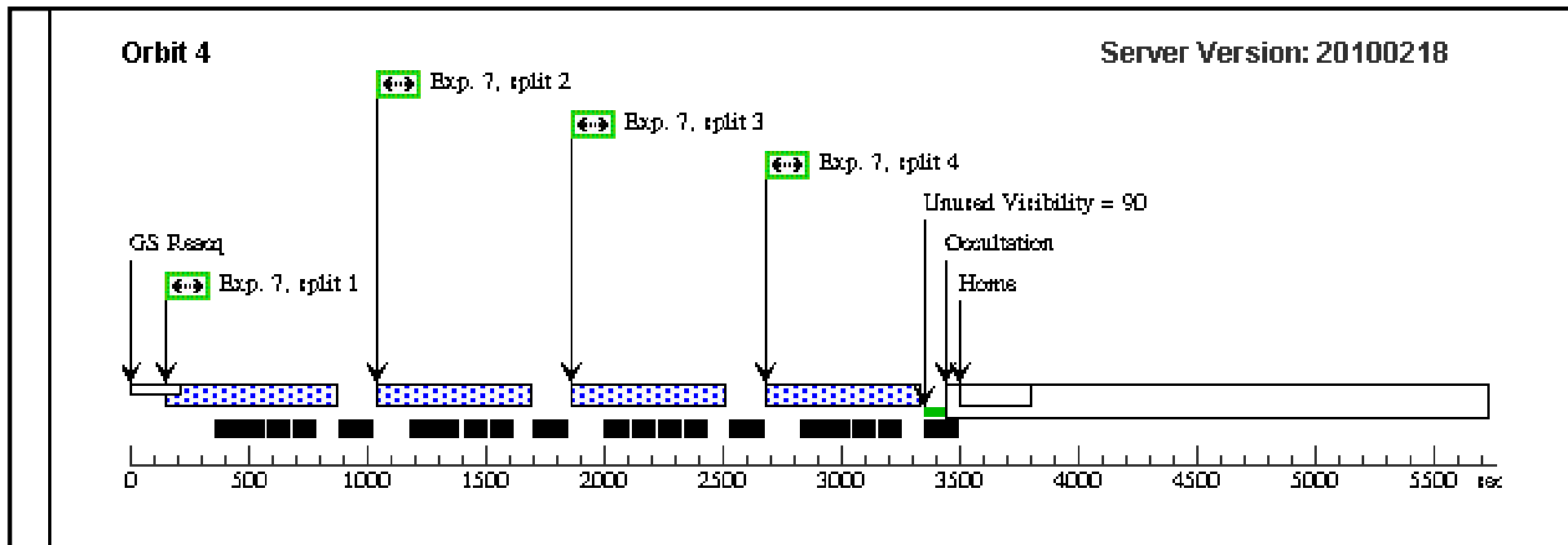
Proposal 12086 - Visit 01 - Generation of 1-D Fixed Pattern Templates

Thu Apr 22 01:52:47 GMT 2010

Visit	<b>Proposal 12086, Visit 01, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: COS/FUV Special Requirements: (none) <i>Comments: Use dispersed acq for the G130M.</i> <i>COS.A284789 shows that minimum S/N = 38/pix for 1291 and COS.A284791 implies 1327 minimum S/N = 38/pix</i>									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(1)	WD0320-539	RA: 03 22 14.8100 (50.5617083d) Dec: -53 45 15.98 (-53.75444d) Equinox: J2000	Proper Motion RA: 0.0010s/yr Proper Motion Dec: -0.0660"/yr Epoch of Position: 2000	V=14.9+/-0.10	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(1)	WD0320-539	COS/FUV, ACQ/SEARCH, PSA	G130M 1291 A	SCAN-SIZE=2			1 Secs [==>]	[1]
	2	(1)	WD0320-539	COS/FUV, ACQ/PEAKXD, PSA	G130M 1291 A				1 Secs [==>]	[1]
	3	(1)	WD0320-539	COS/FUV, ACQ/PEAKD, PSA	G130M 1291 A	STEP-SIZE=0.1			1 Secs [==>]	[1]
	4	(1)	WD0320-539	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=AUTO; BUFFER-TIME=11 1; FLASH=YES			1900 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)]	[1]
	5	(1)	WD0320-539	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=AUTO; BUFFER-TIME=11 1; FLASH=YES			2400 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)]	[2]
	6	(1)	WD0320-539	COS/FUV, TIME-TAG, PSA	G130M 1327 A	FP-POS=AUTO; BUFFER-TIME=11 1; FLASH=YES			2400 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)]	[3]
7	(1)	WD0320-539	COS/FUV, TIME-TAG, PSA	G130M 1327 A	BUFFER-TIME=11 1; FP-POS=AUTO; FLASH=YES			2400 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)]	[4]	



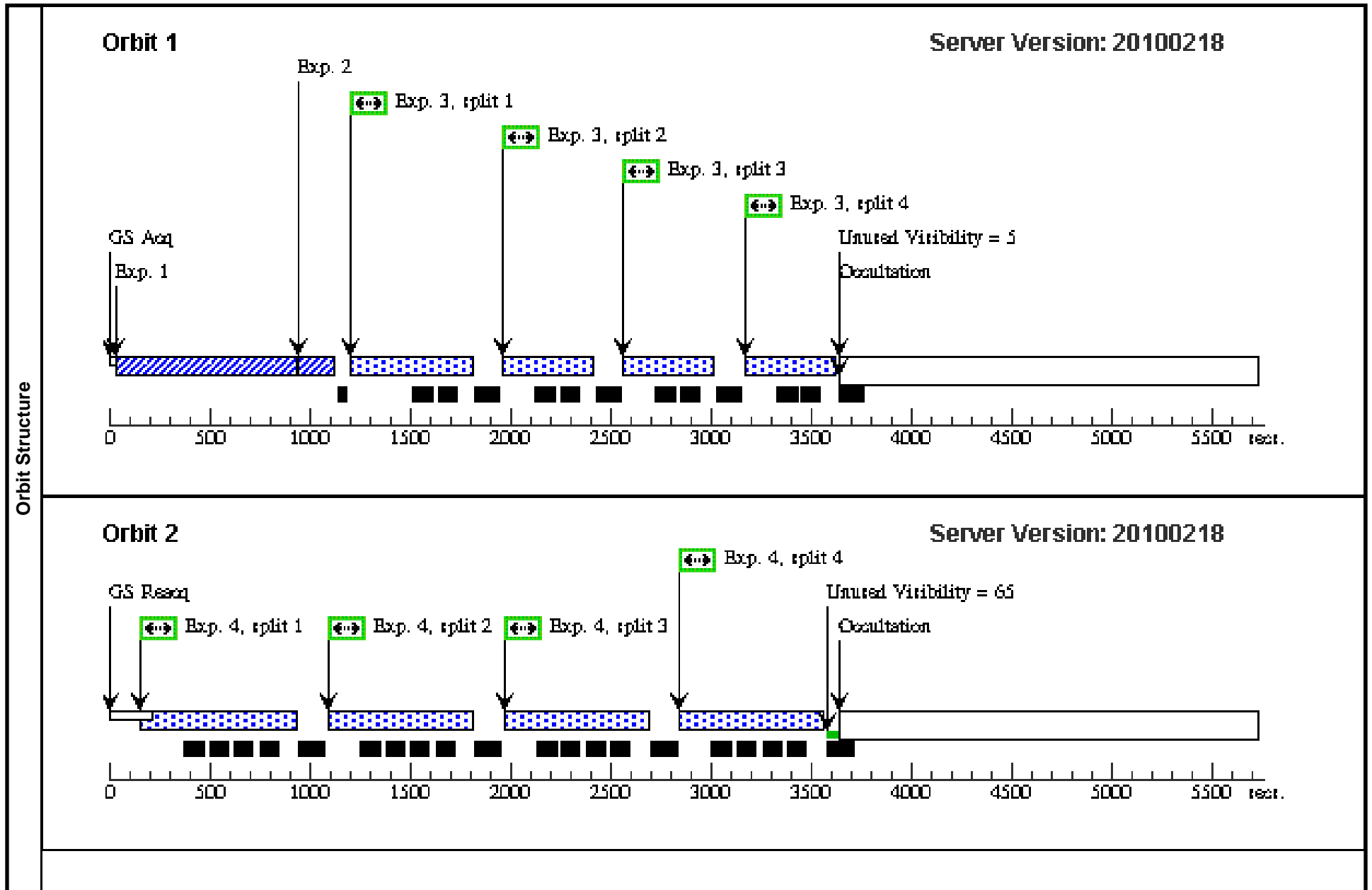




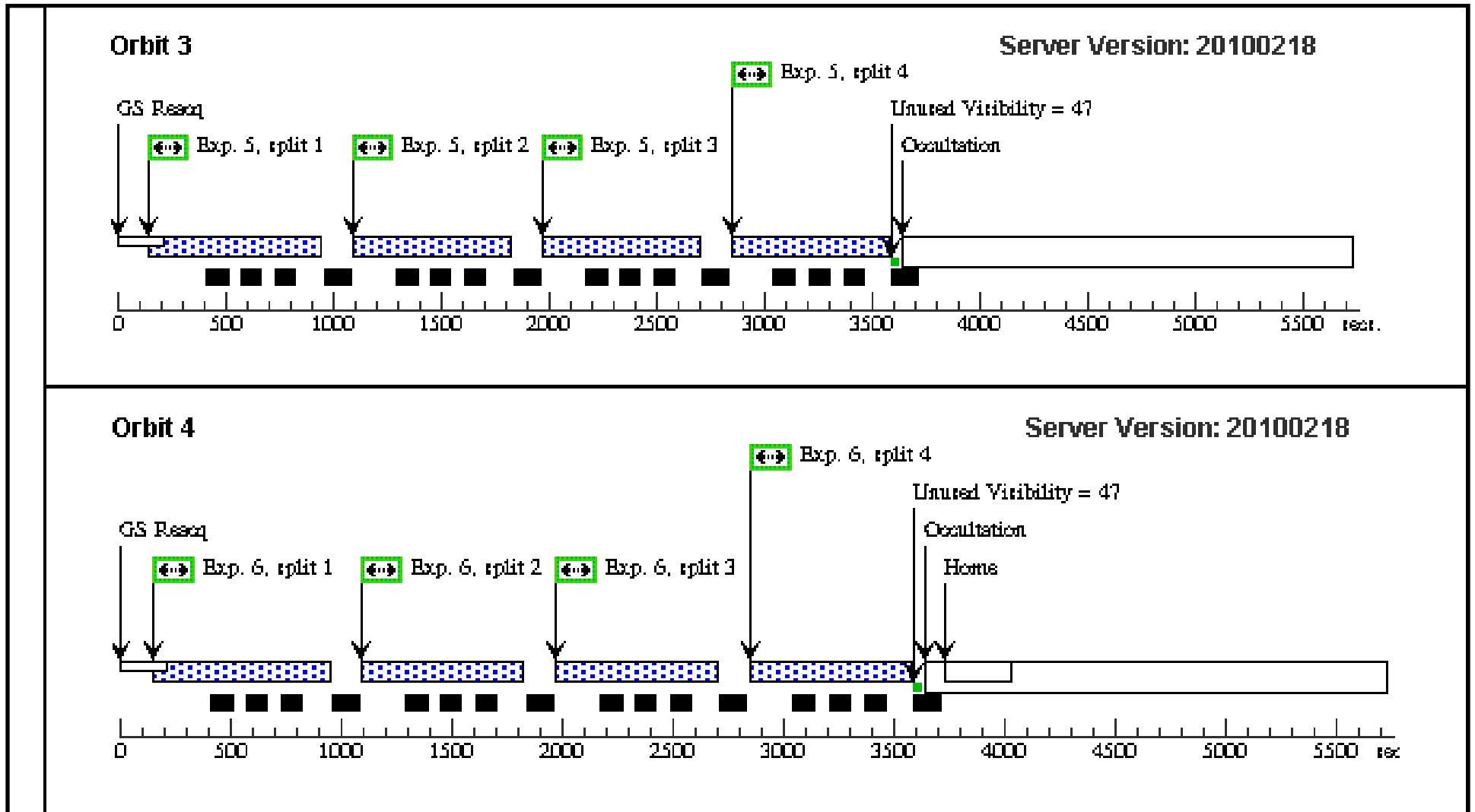
Proposal 12086 - Visit 02 - Generation of 1-D Fixed Pattern Templates

Thu Apr 22 01:52:49 GMT 2010

Visit	<b>Proposal 12086, Visit 02, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: COS/NUV, COS/FUV Special Requirements: (none) <i>Comments: Use NUVACQ. COS.A286810 shows 1577 minimum S/N = 24/pix, and COS.A286803 gives a minimum 1623 S/N = 22/pix</i>									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(2)	WD1057+719	RA: 11 00 34.2200 (165.1425833d) Dec: +71 38 2.99 (71.63416d) Equinox: J2000	Proper Motion RA: -0.0097s/yr Proper Motion Dec: -0.0200"/yr Epoch of Position: 2000	V=14.68+/-0.01	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(2) WD1057+719	COS/NUV, ACQ/SEARCH, BOA	MIRRORA	SCAN-SIZE=3; STEP-SIZE=1.767				35 Secs [==>]	[1]
	2	(2) WD1057+719	COS/NUV, ACQ/IMAGE, BOA	MIRRORA					35 Secs [==>]	[1]
	3	(2) WD1057+719	COS/FUV, TIME-TAG, PSA	G160M 1577 A	FP-POS=AUTO; FLASH=YES; BUFFER-TIME=12 5				1600 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)]	[1]
	4	(2) WD1057+719	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=12 5; FP-POS=AUTO; FLASH=YES				2650 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)]	[2]
	5	(2) WD1057+719	COS/FUV, TIME-TAG, PSA	G160M 1623 A	FP-POS=AUTO; FLASH=YES; BUFFER-TIME=16 0				2700 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)]	[3]
6	(2) WD1057+719	COS/FUV, TIME-TAG, PSA	G160M 1623 A	BUFFER-TIME=16 0; FP-POS=AUTO; FLASH=YES				2700 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)]	[4]	







Proposal 12086 - Visit 03 - Generation of 1-D Fixed Pattern Templates

Thu Apr 22 01:52:50 GMT 2010

Visit	<b>Proposal 12086, Visit 03, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: COS/NUV, COS/FUV Special Requirements: (none) <i>Comments: Only G140L CENWAVE=1105 has to be done. COS.A287941 shows S/N &gt; 9.5/pix for lam &lt; 2000, or 15.6/pix for lam &lt; 1900 -- the S/N rapidly increases with decreasing wavelength.</i>									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(3)	WD0615-59	RA: 06 16 14.2600 (94.0594167d) Dec: -59 12 27.50 (-59.20764d) Equinox: J2000	Proper Motion RA: -0.0059s/yr Proper Motion Dec: -0.317"/yr Epoch of Position: 2000	V= 14.09+/-0.01	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(3) WD0615-59	COS/NUV, ACQ/SEARCH, BOA	MIRRORA	SCAN-SIZE=3; STEP-SIZE=1.767				91 Secs [==>]	[1]
	2	(3) WD0615-59	COS/NUV, ACQ/IMAGE, BOA	MIRRORA					91 Secs [==>]	[1]
	3	(3) WD0615-59	COS/FUV, TIME-TAG, PSA	G140L 1105 A	FP-POS=AUTO; BUFFER-TIME=15 0; FLASH=YES				600 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)]	[1]
	4	(3) WD0615-59	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=38 5; FP-POS=AUTO; FLASH=YES				2720 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)]	[2]
5	(3) WD0615-59	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=38 5; FP-POS=AUTO; FLASH=YES				2720 Secs [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)]	[3]	

