



13027 - Escape of Lyman photons from Tololo 1247-232

Cycle: 20, Proposal Category: GO

(Availability Mode: SUPPORTED)

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) TOLOLO-1247-232	ACS/SBC	1	12-Jun-2013 21:07:36.0	yes
02	(1) TOLOLO-1247-232	WFC3/UVIS	2	12-Jun-2013 21:07:50.0	yes
11	(2) TOLOLO-1247-232-FUVHOT	COS/FUV COS/NUV	2	12-Jun-2013 21:08:01.0	yes
12	(2) TOLOLO-1247-232-FUVHOT	COS/FUV COS/NUV	3	12-Jun-2013 21:08:14.0	yes

8 Total Orbits Used

ABSTRACT

Tololo 1247-232 is a unique galaxy in the local universe in that it is the best Lyman continuum emitter candidate in the whole FUSE archive. Moreover, it has an unusually blue continuum in the spectral region just longwards of the Lyman limit, and it is a bright Lyman alpha emitter.

Hence, this galaxy has an enormous potential as an astrophysical laboratory where the fate and transport of ionizing and Hydrogen recombination line photons can be studied in detail.

To substantiate these findings, HST follow up with COS spectroscopy, and imaging, is required. We propose to map the far UV morphology with ACS/SBC. By adding observations with WFC3/UVIS we can in addition map the near UV spectral slope, Lyman alpha, Halpha and Hbeta at HST resolution. We will use this information to properly position the COS aperture and the images will also be vital for the analysis of the COS spectra themselves.

OBSERVING DESCRIPTION

First the target should be imaged with ACS/SBC and WFC3/UVIS in a total of 7 filter settings. These images will be analysed in a timely manner to select the optimum pointing for the COS spectroscopy that will follow. For each imaging filter observation there will be 2 exposures with small POS-TARG shifts in between.

The SBC imaging is straightforward and uses the sequence F140LP - F125LP - F125LP - F140LP in order to have the F125LP observations done in the shadow part of the orbit. In order to lower the dark current, the SBC should preferably not have been used in the preceeding visit (by another program).

The target galaxy has a small angular size, approx 10 arcsec. In order to mitigate CTE effects the WFC3 imaging has therefore been designed to put the galaxy approx 20 arcsec from the readout of UVIS ccd 1. For the quad-filter images, this has been done by using the the FIX QUAD aperture followed by a small pos-targ. Due to the confused bandpass in the quadrant interfaces we here put the target at slightly higher y-coordinate. For the other filters we have selected the UVIS aperture which put the target approx 10 arcsec above the CCD1 readout, followed by a pos-targ of 10 arcsec in the Y-director to get the target at a more comfortable distance from the chip boundary. All WFC3 imaging has two filters per bandpass that are offset by 2.95 and 3.15 arcsec in X and Y, respectively, to dither over possible droplets. To further mitigate the CTE effects in the UVIS observations where all exposures are expected to have low background levels as judged by the ETC, we have inserted a postflash of 10 electrons.

The COS spectroscopy will be performed with the G130M grating in two different wavelength regions, the first sampling the Lyman continuum and the second Lyman alpha as well as ISM absorption lines. Moreover, the COS spectroscopy will be obtained at 2 different orientations offset by approximately 90 degrees to allow extraction of spatial information. The COS visits included in this version of the phase 2 file examples of what they

may look like, but will be reworked once the imaging data has been processed. The COS visits have been put on hold for the execution of the SBC and UVIS imaging visits.

REAL TIME JUSTIFICATION

NA

CALIBRATION JUSTIFICATION

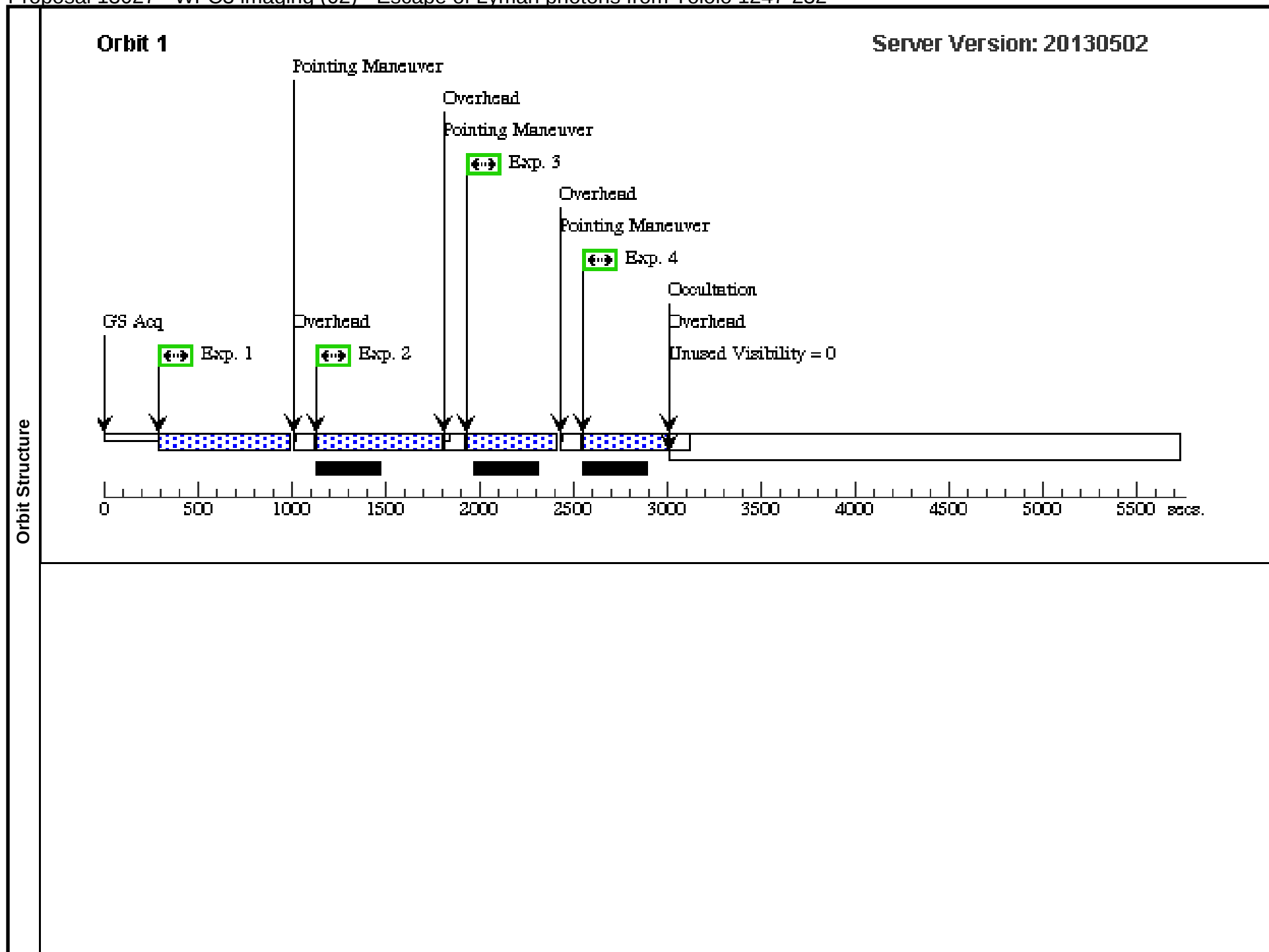
NA

Proposal 13027 - ACS/SBC imaging (01) - Escape of Lyman photons from Tololo 1247-232

Visit	Proposal 13027, ACS/SBC imaging (01), completed									Thu Jun 13 01:08:23 GMT 2013
	Diagnostic Status: No Diagnostics									
	Scientific Instruments: ACS/SBC									
	Special Requirements: SCHED 100%; AFTER 02 BY 21 D TO 50 D									
Comments: In order to minimize the dark current, this visit should not be scheduled immediately after another visit that uses SBC.										
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous	
	(1)	TOLOLO-1247-232	RA: 12 50 18.9000 (192.5787500d) Dec: -23 33 57.60 (-23.56600d) Equinox: J2000				V=15.4		Reference Frame: ICRS	
Comments: This object was generated by the targetselector and retrieved from the NED database.										
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F140LP #1 (ACS.im.41 32 3ACS.im.41 3713712)	(1) TOLOLO-1247-2	ACS/SBC, ACCUM, SBC	F140LP				604 Secs (604 Secs)	
									[==>]	[1]
	2	F125LP #1 (ACS.im.41 32 3712)	(1) TOLOLO-1247-2	ACS/SBC, ACCUM, SBC	F125LP		SHADOW		604 Secs (604 Secs)	
									[==>]	[1]
	3	F125LP #2 (ACS.im.41 32 3712)	(1) TOLOLO-1247-2	ACS/SBC, ACCUM, SBC	F125LP		POS TARG 0.672,0.666; SHADOW		604 Secs (604 Secs)	
								[==>]	[1]	
4	F140LP #2 (ACS.im.41 32 3713)	(1) TOLOLO-1247-2	ACS/SBC, ACCUM, SBC	F140LP		SAME POS AS 3		604 Secs (604 Secs)		
								[==>]	[1]	
Orbit Structure	Orbit 1									
	Server Version: 20130502									

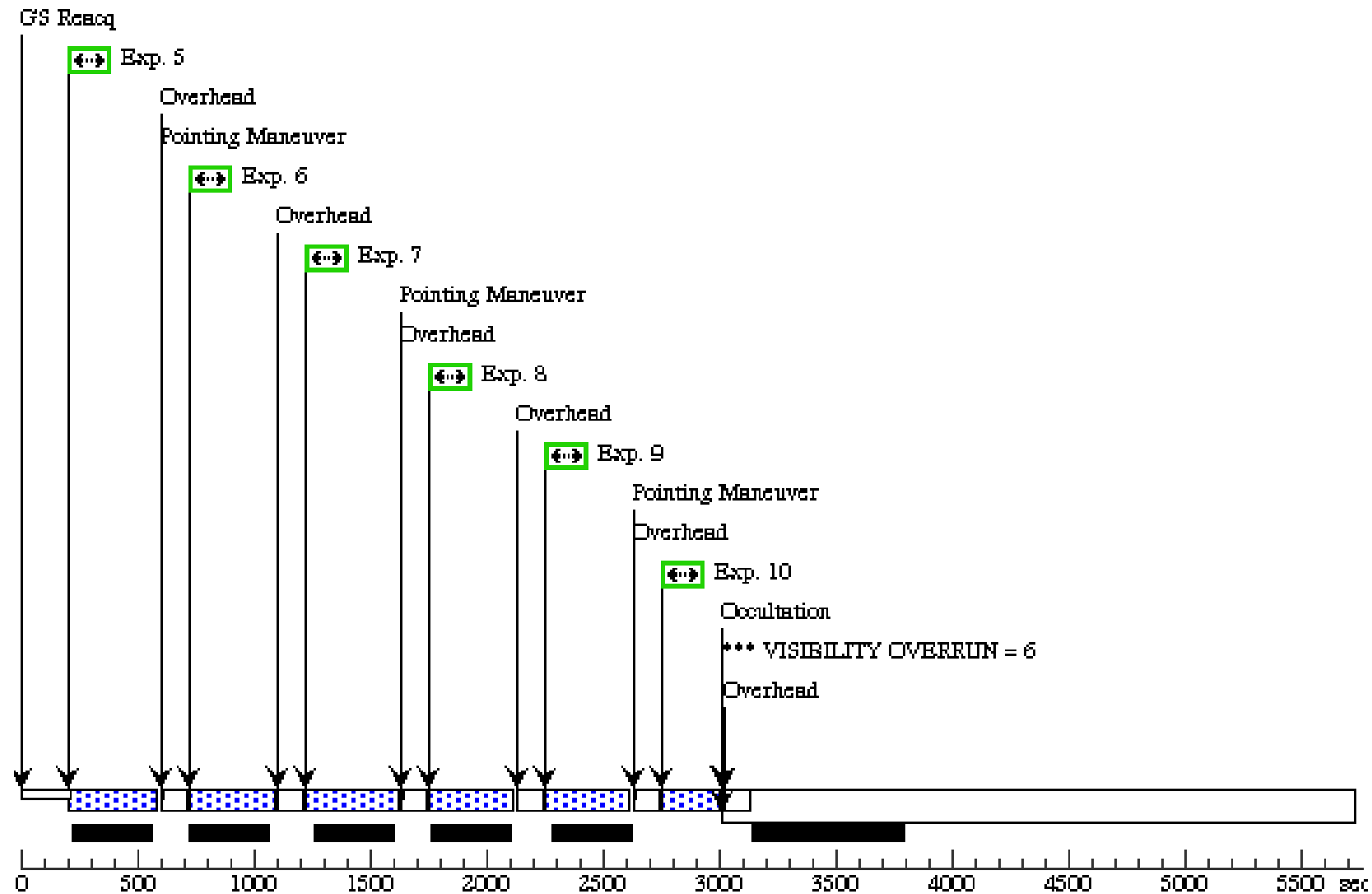
Proposal 13027 - WFC3 imaging (02) - Escape of Lyman photons from Tololo 1247-232

Visit	Proposal 13027, WFC3 imaging (02), completed Thu Jun 13 01:08:25 GMT 2013									
	Diagnostic Status: Warning Scientific Instruments: WFC3/UVIS Special Requirements: SCHED 100%									
Diagnostics	(WFC3 imaging (02)) Warning (Orbit Planner): VISIBILITY OVERRUN (H-beta #1 (02.001)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures. (H-beta #2 (02.002)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	TOLOLO-1247-232	RA: 12 50 18.9000 (192.5787500d) Dec: -23 33 57.60 (-23.56600d) Equinox: J2000 Comments: This object was generated by the targetselector and retrieved from the NED database.		V=15.4	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	H-beta #1	(1) TOLOLO-1247-2 32	WFC3/UVIS, ACCUM, UVIS-QUAD-FIX	FQ508N	FLASH=10	POS TARG 0,-8		670 Secs (670 Secs) [==>]	[1]
	2	H-beta #2	(1) TOLOLO-1247-2 32	WFC3/UVIS, ACCUM, UVIS-QUAD-FIX	FQ508N	FLASH=10	POS TARG 2.95,-4. 85		670 Secs (670 Secs) [==>]	[1]
	3	F336W #1	(1) TOLOLO-1247-2 32	WFC3/UVIS, ACCUM, UVIS	F336W	FLASH=10	POS TARG 0,10		450 Secs (450 Secs) [==>]	[1]
	4	F336W #2	(1) TOLOLO-1247-2 32	WFC3/UVIS, ACCUM, UVIS	F336W	FLASH=10	POS TARG 2.95,13. 15		450 Secs (450 Secs) [==>]	[1]
	5	Halphi #1	(1) TOLOLO-1247-2 32	WFC3/UVIS, ACCUM, UVIS	F680N	FLASH=10	SAME POS AS 4		370 Secs (370 Secs) [==>]	[2]
	6	Halphi #2	(1) TOLOLO-1247-2 32	WFC3/UVIS, ACCUM, UVIS	F680N	FLASH=10	SAME POS AS 3		370 Secs (370 Secs) [==>]	[2]
	7	F438W #1	(1) TOLOLO-1247-2 32	WFC3/UVIS, ACCUM, UVIS	F438W	FLASH=10	SAME POS AS 3		366 Secs (366 Secs) [==>]	[2]
	8	F438W #2	(1) TOLOLO-1247-2 32	WFC3/UVIS, ACCUM, UVIS	F438W	FLASH=10	SAME POS AS 4		366 Secs (366 Secs) [==>]	[2]
	9	F775W #1	(1) TOLOLO-1247-2 32	WFC3/UVIS, ACCUM, UVIS	F775W	FLASH=8	SAME POS AS 4		350 Secs (350 Secs) [==>]	[2]
	10	F775W #2	(1) TOLOLO-1247-2 32	WFC3/UVIS, ACCUM, UVIS	F775W	FLASH=10	SAME POS AS 3		250 Secs (250 Secs) [==>]	[2]



Orbit 2

Server Version: 20130502



Proposal 13027 - COS; 2 orbit; N-S ORIENT (11) - Escape of Lyman photons from Tololo 1247-232

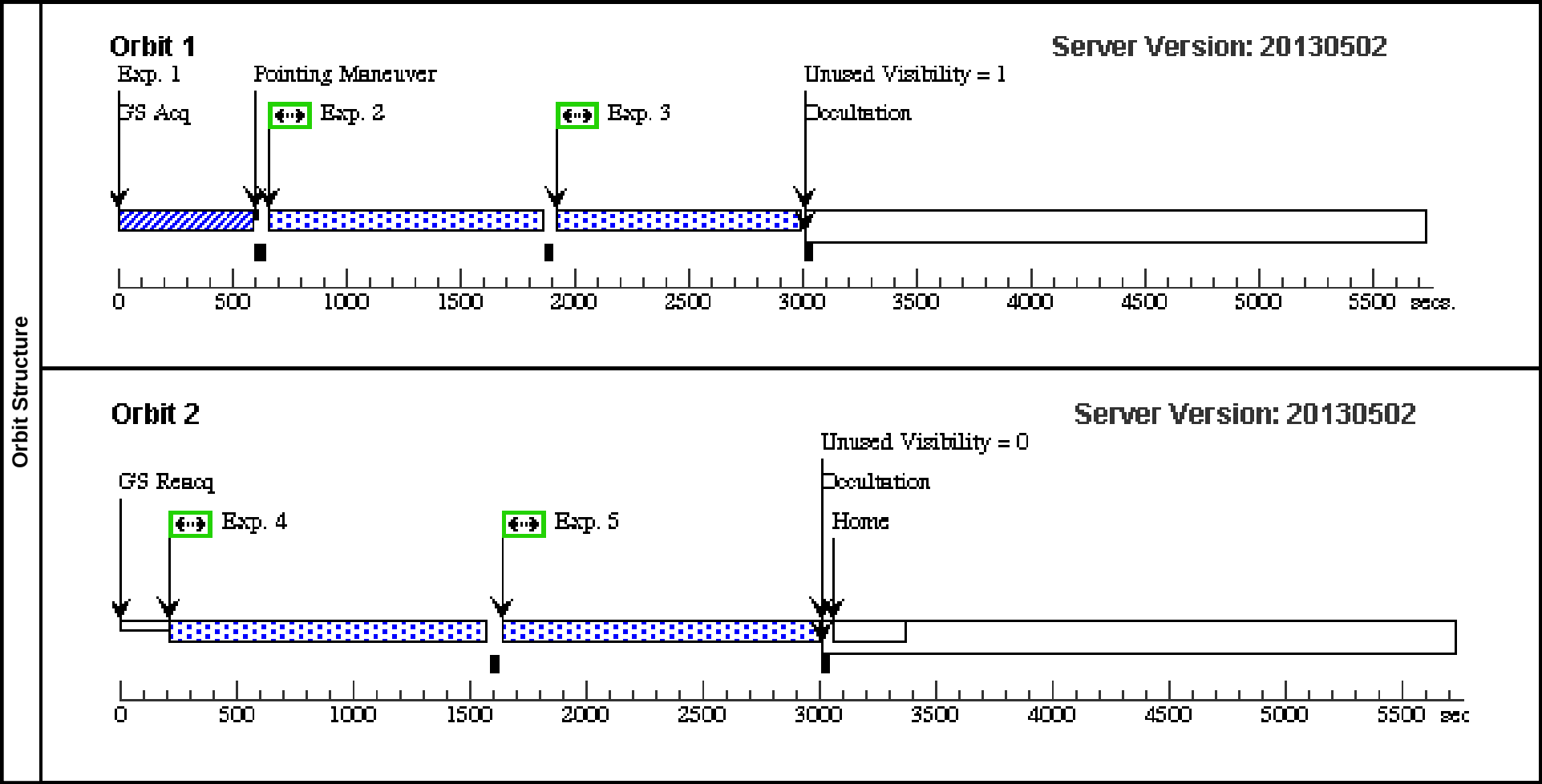
Visit	Proposal 13027, COS; 2 orbit; N-S ORIENT (11), completed					Thu Jun 13 01:08:29 GMT 2013
	Diagnostic Status: No Diagnostics					
	Scientific Instruments: COS/NUV, COS/FUV					
	Special Requirements: SCHED 100%; ORIENT 115D TO 155 D; ORIENT 295D TO 335 D					
	Comments: First COS visit, 2 orbits, first ORIENT angle					
	This visit must be executed BEFORE visit 12.					
Fixed Targets	The target is two star clusters, which are aligned ~0.3 arcsec N-S of each other. Both fit in the aperture and both are bright. In order to possibly extract them independently, and to work at the maximal spectral resolution even if we cannot, we would like to align the XDISP axis of COS in the N-S direction. Or P.A.=0=180.					
	According to the PII instructions, table 7.4, the +Y (XDISP) axis is offset 135 degrees from the U3 axis, and the caption states that we should add this to the P.A. on sky. Thus we want to align the U3 axis at +135 (or 315) degrees. We then add a +/- 20 degree tolerance upon this, giving a 40 degree allowed range.					
	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(2)	TOLOLO-1247-232-FUVHOT	RA: 12 50 18.9019 (192.5787579d) Dec: -23 33 57.39 (-23.56594d) Equinox: J2000		V=15.4	Reference Frame: ICRS
	Comments: This object was duplicated from Object 1, with coordinates modified based upon the 2MASS point source catalogue, for precise acquisition with the COS.					
	Old coordinates from Target Selector : 12 50 18.9000, -23 33 57.60 New coordinates from 2MASS : 12 50 18.9019, -23 33 57.39 The difference is just 0.21 arcsec.					

Proposal 13027 - COS; 2 orbit; N-S ORIENT (11) - Escape of Lyman photons from Tololo 1247-232

Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Acquisition (COS.ta.499 419)	(2) TOLOLO-1247-2 32-FUVHOT	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				80 Secs (80 Secs) [==>]	[1]
	Comments: In the ETC Run, the aim is to reach S/N>40 in the brightest star-cluster. This flux has been estimated by full multiband photometry with ACS/SBC and WFC3/UVIS, in 0.2 arcsec (radius) with quoted aperture corrections applied. Thus it is *NOT* the same spectrum as used for observations LyC1-LyC4, which use photometry performed inside the full COS aperture (R=1.25 arcsec). Standard NUV image acquisition with MIRRORB. Coordinates are well known (<0.4 arcsec) from 2MASS point-source catalogue, GSC2.3, and even 6dFGS. All these are consistent within 0.2 arcsec which agree (also within 0.2 arcsec) with the NED coordinates used with the targetselector for the ACS/SBC and WFC3/UVIS visits. Acquisition is with MIRRORB, since the predicted countrate is very close to the 50 e-/sec BOP limit with MIRROR A.									
	2	LyC1, Orient N-S (COS.sp.500 147)	(2) TOLOLO-1247-2 32-FUVHOT	COS/FUV, TIME-TAG, PSA	G130M 1055 A	EXTENDED=NO; FLASH=YES; FP-POS=1; SEGMENT=BOTH; BUFFER-TIME=7200			1020 Secs (1020 Secs) [==>]	[1]
Comments: The spectrum uploaded for the ETC Run is based upon full multiband photometry in ACS/SBC and WFC3/UVIS, and a fit to the SED. The aperture was a circle of 1.25 arcsec radius, centred upon the brightest cluster (at 1500 AA). Thus it is NOT the same as the spectrum used for the NUV Acquisition observation, which is based upon small aperture photometry of the individual clusters. Observations LyC1 and LyC2 have somewhat shorter Exposure than LyC3 and LyC4. Sequentially, observations increment the FP-POS setting by 1. Buffer time is set to 2/3 the BT output by the ETC. We notice that when setting BT to Exposure Time, the overhead increases.										
Exposures	3	LyC2, Orient N-S (COS.sp.500 147)	(2) TOLOLO-1247-2 32-FUVHOT	COS/FUV, TIME-TAG, PSA	G130M 1055 A	EXTENDED=NO; FLASH=YES; FP-POS=2; SEGMENT=BOTH; BUFFER-TIME=7200			1020 Secs (1020 Secs) [==>]	[1]
	Comments: The spectrum uploaded for the ETC Run is based upon full multiband photometry in ACS/SBC and WFC3/UVIS, and a fit to the SED. The aperture was a circle of 1.25 arcsec radius, centred upon the brightest cluster (at 1500 AA). Thus it is NOT the same as the spectrum used for the NUV Acquisition observation, which is based upon small aperture photometry of the individual clusters. Observations LyC1 and LyC2 have somewhat shorter Exposure than LyC3 and LyC4. Sequentially, observations increment the FP-POS setting by 1. Buffer time is set to 2/3 the BT output by the ETC. We notice that when setting BT to Exposure Time, the overhead increases.									
	4	LyC3, Orient N-S (COS.sp.500 148)	(2) TOLOLO-1247-2 32-FUVHOT	COS/FUV, TIME-TAG, PSA	G130M 1055 A	EXTENDED=NO; FLASH=YES; FP-POS=3; SEGMENT=BOTH; BUFFER-TIME=7200			1307 Secs (1307 Secs) [==>]	[2]
	Comments: The spectrum uploaded for the ETC Run is based upon full multiband photometry in ACS/SBC and WFC3/UVIS, and a fit to the SED. The aperture was a circle of 1.25 arcsec radius, centred upon the brightest cluster (at 1500 AA). Thus it is NOT the same as the spectrum used for the NUV Acquisition observation, which is based upon small aperture photometry of the individual clusters. Observations LyC1 and LyC2 have somewhat shorter Exposure than LyC3 and LyC4. Sequentially, observations increment the FP-POS setting by 1. Buffer time is set to 2/3 the BT output by the ETC. We notice that when setting BT to Exposure Time, the overhead increases.									

Proposal 13027 - COS; 2 orbit; N-S ORIENT (11) - Escape of Lyman photons from Tololo 1247-232

5	LyC4, Orien t N-S (COS.sp.500 148)	(2) TOLOLO-1247-2 32-FUVHOT	COS/FUV, TIME-TAG, PSA	G130M 1055 A	EXTENDED=NO; FLASH=YES; FP-POS=4; SEGMENT=BOTH; BUFFER-TIME=72 00	1307 Secs (1307 Secs)	[2]
						[==>]	
<i>Comments: The spectrum uploaded for the ETC Run is based upon full multiband photometry in ACS/SBC and WFC3/UVIS, and a fit to the SED. The aperture was a circle of 1.25 arcsec radius, centred upon the bright test cluster (at 1500 AA). Thus it is NOT the same as the spectrum used for the NUV Acquisition observation, which is based upon small aperture photometry of the individual clusters.</i>							
<i>Observations LyC1 and LyC2 have somewhat shorter Exposure than LyC3 and LyC4. Sequentially, observations increment the FP-POS setting by 1.</i>							
<i>Buffer time is set to 2/3 the BT output by the ETC. We notice that when setting BT to Exposure Time, the overhead increases.</i>							



Proposal 13027 - COS; 3 orbit; N-S ORIENT (12) - Escape of Lyman photons from Tololo 1247-232

Visit	Proposal 13027, COS; 3 orbit; N-S ORIENT (12), scheduling					Thu Jun 13 01:08:31 GMT 2013
	Diagnostic Status: No Diagnostics					
	Scientific Instruments: COS/NUV, COS/FUV					
	Special Requirements: SCHED 100%; SAME ORIENT AS 11					
	Comments: Second COS visit, 3 orbits, same ORIENT angle					
	This visit must be executed AFTER visit 11.					
Fixed Targets	The target is two star clusters, which are aligned ~0.3 arcsec N-S of each other. Both fit in the aperture and both are bright. In order to possibly extract them independently, and to work at the maximal spectral resolution even if we cannot, we would like to align the XDISP axis of COS in the N-S direction. Or P.A.=0=180.					
	According to the PII instructions, table 7.4, the +Y (XDISP) axis is offset 135 degrees from the U3 axis, and the caption states that we should add this to the P.A. on sky. Thus we want to align the U3 axis at +135 (or 315) degrees. We then add a +/- 20 degree tolerance upon this, giving a 40 degree allowed range.					
	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(2)	TOLOLO-1247-232-FUVHOT	RA: 12 50 18.9019 (192.5787579d) Dec: -23 33 57.39 (-23.56594d) Equinox: J2000		V=15.4	Reference Frame: ICRS
Comments: This object was duplicated from Object 1, with coordinates modified based upon the 2MASS point source catalogue, for precise acquisition with the COS.						
Old coordinates from Target Selector : 12 50 18.9000, -23 33 57.60						
New coordinates from 2MASS : 12 50 18.9019, -23 33 57.39						
The difference is just 0.21 arcsec.						

Proposal 13027 - COS; 3 orbit; N-S ORIENT (12) - Escape of Lyman photons from Tololo 1247-232

Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Acquisition (COS.ta.499 419)	(2) TOLOLO-1247-2 32-FUVHOT	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				80 Secs (80 Secs)	
									[==>]	[1]
	Comments: In the ETC Run, the aim is to reach S/N>40 in the brightest star-cluster. This flux has been estimated by full multiband photometry with ACS/SBC and WFC3/UVIS, in 0.2 arcsec (radius) with quoted aperture corrections. Thus it is *NOT* the same spectrum as used for observations LyC1-LyC4, which use photometry performed inside the full COS aperture (R=1.25 arcsec). Standard NUV acquisition with MIRRORB. Coordinates are well known (<0.4 arcsec) from 2MASS point-source catalogue, GSC2.3, and even 6dFGS. All these are consistent within 0.2 arcsec which agree (also within 0.2 arcsec) with the NED coordinates used with the targetselector for the ACS/SBC and WFC3/UVIS visits. Acquisition is with MIRRORB, since the predicted countrate is very close to to the 50 e-/sec BOP limit.									
	2	LyC1, Orient N-S (COS.sp.500 147)	(2) TOLOLO-1247-2 32-FUVHOT	COS/FUV, TIME-TAG, PSA	G130M 1055 A	EXTENDED=NO; FLASH=YES; FP-POS=1; SEGMENT=BOTH; BUFFER-TIME=72 00			1020 Secs (1020 Secs)	
									[==>]	[1]
Comments: The spectrum uploaded for the ETC Run is based upon full multiband photometry in ACS/SBC and WFC3/UVIS, and a fit to the SED. The aperture was a circle of 1.25 arcsec radius, centred upon the brightest cluster (at 1500 AA). Thus it is NOT the same as the spectrum used for the NUV Acquisition observation, which is based upon small aperture photometry of the individual clusters. Observations LyC1 and LyC2 have somewhat shorter Exposure than LyC3 and LyC4. Subsequent observations increment the FP-POS setting by 1. Buffer time is set to 2/3 the BT output by the ETC. We notice that when setting BT to Exposure Time, the overhead increases.										
	3	LyC2, Orient N-S (COS.sp.500 147)	(2) TOLOLO-1247-2 32-FUVHOT	COS/FUV, TIME-TAG, PSA	G130M 1055 A	EXTENDED=NO; FLASH=YES; FP-POS=2; SEGMENT=BOTH; BUFFER-TIME=72 00			1020 Secs (1020 Secs)	
									[==>]	[1]
	4	LyC3, Orient N-S (COS.sp.500 148)	(2) TOLOLO-1247-2 32-FUVHOT	COS/FUV, TIME-TAG, PSA	G130M 1055 A	EXTENDED=NO; FLASH=YES; FP-POS=3; SEGMENT=BOTH; BUFFER-TIME=72 00			1307 Secs (1307 Secs)	
									[==>]	[2]
	5	LyC4, Orient N-S (COS.sp.500 148)	(2) TOLOLO-1247-2 32-FUVHOT	COS/FUV, TIME-TAG, PSA	G130M 1055 A	EXTENDED=NO; FLASH=YES; FP-POS=4; SEGMENT=BOTH; BUFFER-TIME=72 00			1307 Secs (1307 Secs)	
									[==>]	[2]

Proposal 13027 - COS; 3 orbit; N-S ORIENT (12) - Escape of Lyman photons from Tololo 1247-232

6	Lya1, Orient N-S (COS.sp.500 153)	(2) TOLOLO-1247-2 COS/FUV, TIME-TAG, PSA 32-FUVHOT	G130M 1327 A	EXTENDED=NO; FLASH=YES; FP-POS=1; SEGMENT=BOTH; BUFFER-TIME=1970	588 Secs (588 Secs) [==>]	[3]
Comments: For the ETC Run, the same spectrum as for the LyC runs is used, but with the 1327 setting and the central wavelength changed to 1275AA. All observations are the same length, and aim simply to iterate over all four FP-POS settings. Buffer time is set to 2/3 the BT output by the ETC. We notice that when setting BT to Exposure Time, the overhead increases.						
7	Lya2, Orient N-S (COS.sp.500 153)	(2) TOLOLO-1247-2 COS/FUV, TIME-TAG, PSA 32-FUVHOT	G130M 1327 A	EXTENDED=NO; FLASH=YES; FP-POS=2; SEGMENT=BOTH; BUFFER-TIME=1970	588 Secs (588 Secs) [==>]	[3]
Comments: For the ETC Run, the same spectrum as for the LyC runs is used, but with the 1327 setting and the central wavelength changed to 1275AA. All observations are the same length, and aim simply to iterate over all four FP-POS settings. Buffer time is set to 2/3 the BT output by the ETC. We notice that when setting BT to Exposure Time, the overhead increases.						
8	Lya3, Orient N-S (COS.sp.500 153)	(2) TOLOLO-1247-2 COS/FUV, TIME-TAG, PSA 32-FUVHOT	G130M 1327 A	EXTENDED=NO; FLASH=YES; FP-POS=3; SEGMENT=BOTH; BUFFER-TIME=1970	588 Secs (588 Secs) [==>]	[3]
Comments: For the ETC Run, the same spectrum as for the LyC runs is used, but with the 1327 setting and the central wavelength changed to 1275AA. All observations are the same length, and aim simply to iterate over all four FP-POS settings. Buffer time is set to 2/3 the BT output by the ETC. We notice that when setting BT to Exposure Time, the overhead increases.						
9	Lya4, Orient N-S (COS.sp.500 153)	(2) TOLOLO-1247-2 COS/FUV, TIME-TAG, PSA 32-FUVHOT	G130M 1327 A	EXTENDED=NO; FLASH=YES; FP-POS=4; SEGMENT=BOTH; BUFFER-TIME=1970	588 Secs (588 Secs) [==>]	[3]
Comments: For the ETC Run, the same spectrum as for the LyC runs is used, but with the 1327 setting and the central wavelength changed to 1275AA. All observations are the same length, and aim simply to iterate over all four FP-POS settings. Buffer time is set to 2/3 the BT output by the ETC. We notice that when setting BT to Exposure Time, the overhead increases.						

