



14935 - COS/FUV LP4: Spectral Resolution of G130M/1223

Cycle: 24, Proposal Category: CAL/COS

(Calibration)

(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) AV75 NONE	COS COS/FUV COS/NUV	1	27-Jun-2017 21:06:01.0	yes
51	(1) AV75 NONE	COS COS/FUV COS/NUV	1	27-Jun-2017 21:06:04.0	yes

<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>
52	(1) AV75 NONE	COS COS/FUV COS/NUV	1	27-Jun-2017 21:06:07.0	yes

3 Total Orbits Used

ABSTRACT

This program will determine the spectral resolution of the new COS/FUV/G130M/1223 setting at Lifetime Position 4 (LP4). The new setting is designed to be identical to G130M/1222 with the exception of its focus value, which will optimise spectral resolution in Segment A. G130M/1223 is designed to place geocoronal Lyman-alpha emission in the detector gap, with the aim of preserving the lifetime of the detector. Following the change of lifetime position to LP4, the spectral resolution of the COS FUV detector is expected to degrade by 10-15%. The knowledge of COS line spread functions (LSFs) is critical for users to evaluate the feasibility and S/N requirements of their observations. In addition, accurate COS LSFs are necessary to perform line profile fitting. Thus, it is necessary to constrain the shape of the COS LSFs at the new lifetime position. To do so, we will acquire COS FUV G130M spectra of the SMC star AzV 75 in the new setting: G130M/1223. Once all FPPOS settings are combined, our observations will reach a S/N of 60 per resolution element. We will test whether previous STIS E140M spectra of AzV 75 convolved with model LP4 COS LSFs can reproduce the observed COS FUV spectra of numerous ISM lines toward AzV 75 at LP4. While we will not be able to detect a 10% change in the core of the COS LSFs, we will rather be able to test the validity of the model LSFs at the new position, and we will be able to directly detect variations in the COS LSFs of 15% or larger.

OBSERVING DESCRIPTION

We will acquire COS G130M spectra of SMC star AzV 75 at the new 1223 CENWAVE at LP4 using all FPPOS positions. The exposure times are calculated such that the combined FPPOS exposures give S/N = 60/resel. We will perform a NUV imaging target acquisition with the BOA.

We are using a non-optimal order of FP-POS because when the OSM mechanism is moved between FP-POS in optimal order there is not enough time to change the focus value to nominal by commanding (TRANS allocates 1 sec for this and moving the focus mech by 300 steps takes longer). When changing FP-POS in non preferential order, it takes 8 sec + 1 min overhead for settling, which allows enough time for commanding to change the focus to nominal, before we change it back to the non-nominal value needed for the exposure.

Proposal 14935 - G130M 1223 LP4 (01) - COS/FUV LP4: Spectral Resolution of G130M/1223

Visit	Proposal 14935, G130M_1223_LP4 (01), failed Wed Jun 28 01:06:08 GMT 2017 Diagnostic Status: Warning Scientific Instruments: COS, COS/FUV, COS/NUV Special Requirements: SCHED 100%; ORIENT 270D TO 60 D; ORIENT 160D TO 165 D																
	Diagnosics (G130M_1223_LP4 (01)) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS (G130M_1223_LP4 (01)) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS (G130M_1223_LP4 (01)) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS																
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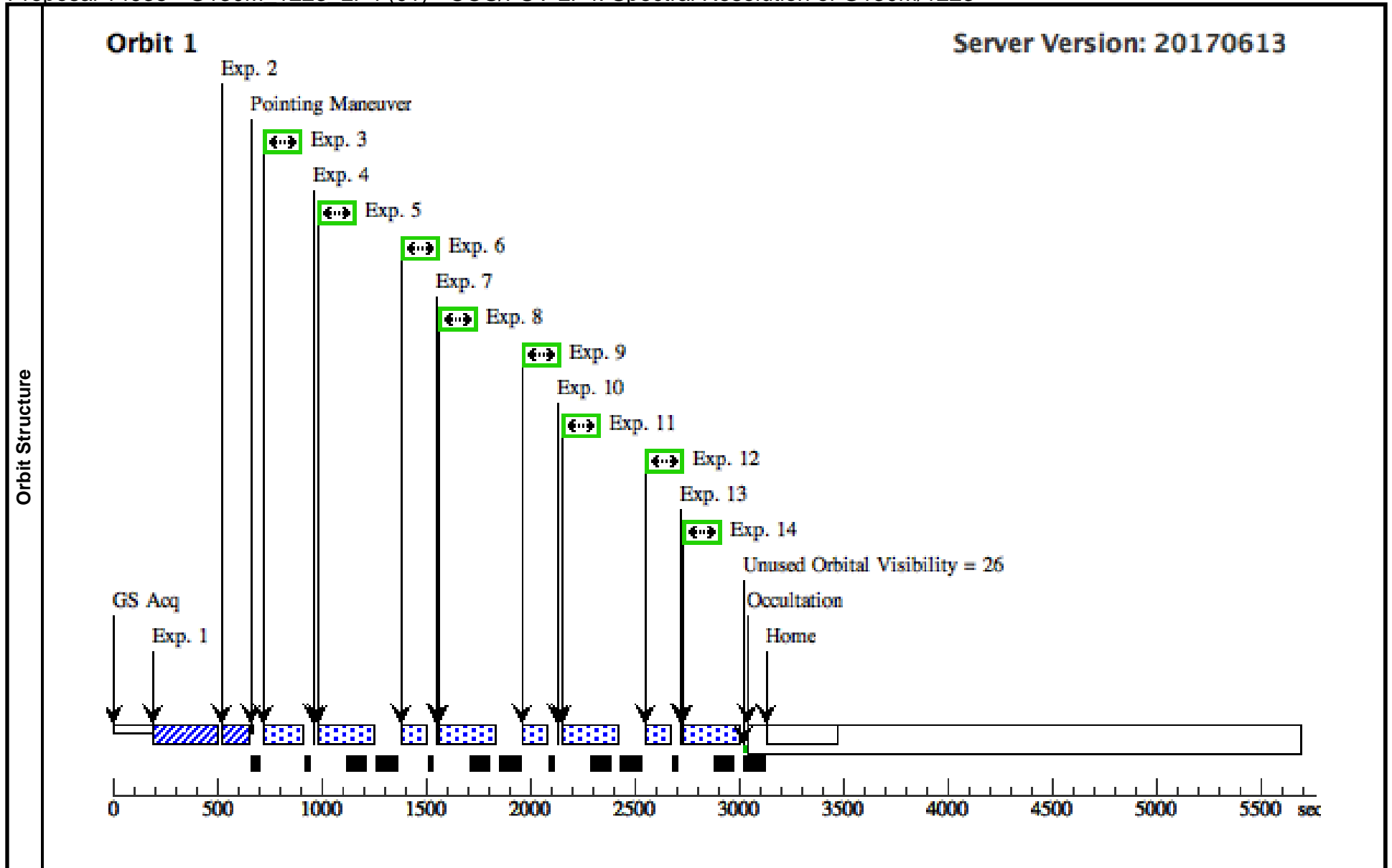
Proposal 14935 - G130M 1223 LP4 (01) - COS/FUV LP4: Spectral Resolution of G130M/1223

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	nuv_boa_mira_acq_search (COS.ta.996699)	(1) AV75	COS/NUV, ACQ/SEARCH, BOA	MIRRORA	STEP-SIZE=1.767; SCAN-SIZE=2; CENTER=FLUX-WT	GS ACQ SCENARIO BASE1B3		7 Secs (7 Secs) [==>]	[1]
2	image_acq_boa (COS.ta.996698)	(1) AV75	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				14 Secs (14 Secs) [==>]	[1]
3	initialization_exp (COS.sp.913465)	(1) AV75	COS/FUV, TIME-TAG, PSA	G130M 1222 A	FP-POS=4; BUFFER-TIME=111; LIFETIME-POS=L P4; FLASH=NO; WAVECAL=NO			0.1 Secs (0.1 Secs) [==>]	[1]
<i>Comments: Initialization exposure to set the zero point to the G130M/1222/LP4 value (absolute position of -879)</i>									
4	Set focus to -256	NONE	COS, ALIGN/OSM		FOCUS=-256			0 Secs (0 Secs) [==>]	[1]
<i>Comments: Set focus to -256 from the G130M/1222 focus position</i>									
5	1223_4 (COS.sp.996695)	(1) AV75	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=111; FP-POS=4; LIFETIME-POS=L P4			220 Secs (220 Secs) [==>]	[1]
6	initialization_exp (COS.sp.913465)	(1) AV75	COS/FUV, TIME-TAG, PSA	G130M 1222 A	FP-POS=3; BUFFER-TIME=111; LIFETIME-POS=L P4; FLASH=NO; WAVECAL=NO			0.1 Secs (0.1 Secs) [==>]	[1]
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<i>Comments: Set focus to -256 from the G130M/1222 focus position</i>									
8	1223_3 (COS.sp.996695)	(1) AV75	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=111; FP-POS=3; LIFETIME-POS=L P4			220 Secs (220 Secs) [==>]	[1]
9	initialization_exp (COS.sp.913465)	(1) AV75	COS/FUV, TIME-TAG, PSA	G130M 1222 A	FP-POS=2; BUFFER-TIME=111; LIFETIME-POS=L P4; FLASH=NO; WAVECAL=NO			0.1 Secs (0.1 Secs) [==>]	[1]
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Exposures

Proposal 14935 - G130M 1223 LP4 (01) - COS/FUV LP4: Spectral Resolution of G130M/1223

10	Set focus to -256	NONE	COS, ALIGN/OSM		FOCUS=-256	0 Secs (0 Secs)	
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11	1223_2 (COS.sp.996 695)	(1) AV75	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=11 1; FP-POS=2; LIFETIME-POS=L P4	220 Secs (220 Secs)	
						[==>]	[1]
12	initialization _exp (COS.sp.913 465)	(1) AV75	COS/FUV, TIME-TAG, PSA	G130M 1222 A	FP-POS=1; BUFFER-TIME=11 1; LIFETIME-POS=L P4; FLASH=NO; WAVECAL=NO	0.1 Secs (0.1 Secs)	
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14	1223_1 (COS.sp.996 695)	(1) AV75	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=11 1; FP-POS=1; LIFETIME-POS=L P4	220 Secs (220 Secs)	
						[==>]	[1]



Proposal 14935 - G130M 1223 LP4 (51) - COS/FUV LP4: Spectral Resolution of G130M/1223

Visit	Proposal 14935, G130M_1223_LP4 (51), completed Wed Jun 28 01:06:08 GMT 2017 Diagnostic Status: Warning Scientific Instruments: COS, COS/FUV, COS/NUV Special Requirements: SCHED 100%; ORIENT 270D TO 60 D; ORIENT 160D TO 165 D																
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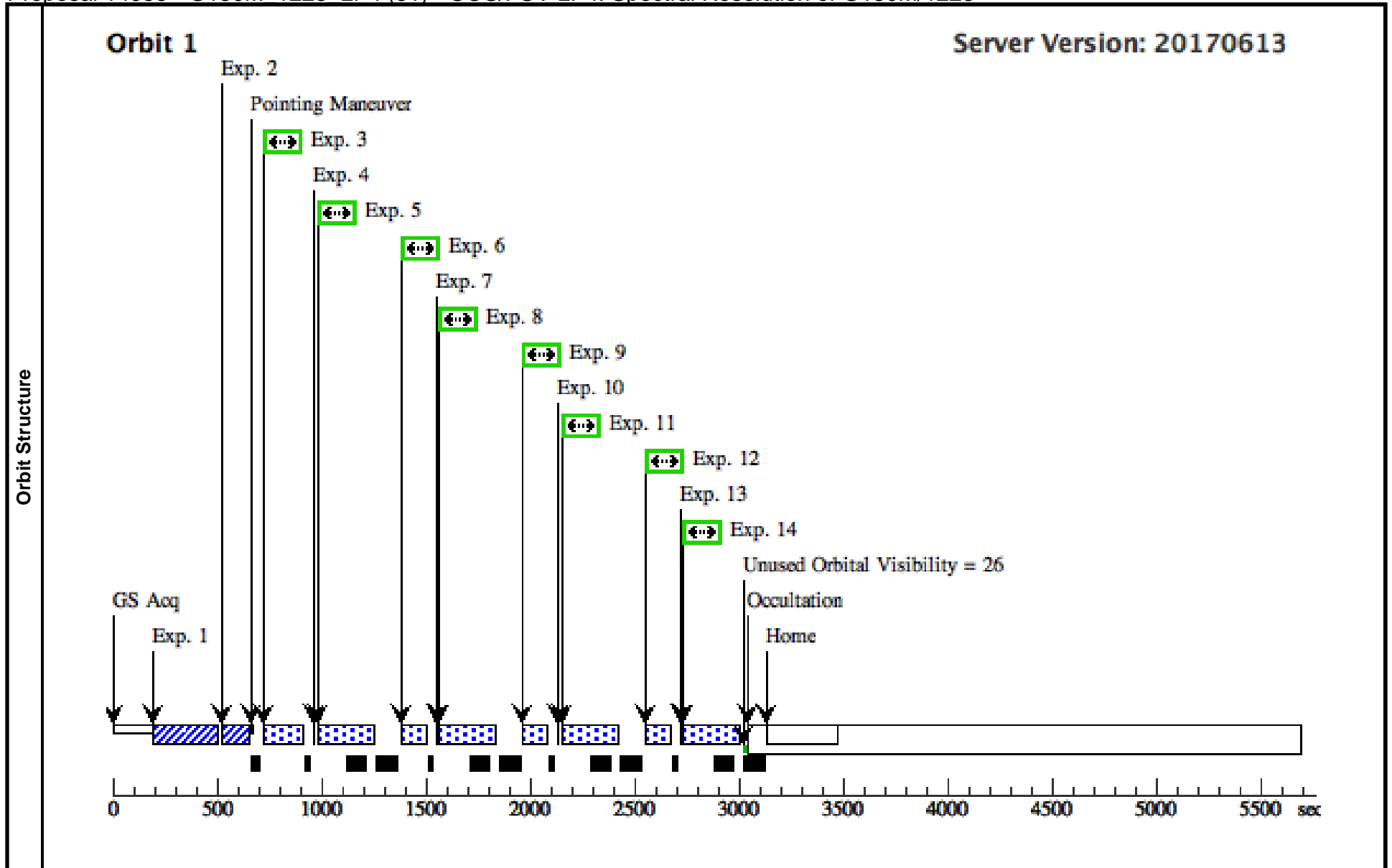
Proposal 14935 - G130M 1223 LP4 (51) - COS/FUV LP4: Spectral Resolution of G130M/1223

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1	nuv_boa_mira_acq_search (COS.ta.996699)	(1) AV75	COS/NUV, ACQ/SEARCH, BOA	MIRRORA	STEP-SIZE=1.767; SCAN-SIZE=2; CENTER=FLUX-WT	GS ACQ SCENARIO BASE1B3		7 Secs (7 Secs) [==>]	[1]
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3	initialization_exp (COS.sp.913465)	(1) AV75	COS/FUV, TIME-TAG, PSA	G130M 1222 A	FP-POS=4; BUFFER-TIME=111; LIFETIME-POS=L P4; FLASH=NO; WAVECAL=NO			0.1 Secs (0.1 Secs) [==>]	[1]
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Proposal 14935 - G130M 1223 LP4 (51) - COS/FUV LP4: Spectral Resolution of G130M/1223

10	Set focus to -256	NONE	COS, ALIGN/OSM		FOCUS=-256	0 Secs (0 Secs)	
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11	1223_2 (COS.sp.996 695)	(1) AV75	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=11 1; FP-POS=2; LIFETIME-POS=L P4	220 Secs (220 Secs)	
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Wed Jun 28 01:06:09 GMT 2017

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