Proposal 14929 (STScI Edit Number: 3, Created: Wednesday, May 10, 2017 8:05:48 PM EST) - Overview



14929 - COS/FUV LP4 Focus Sweep - New G130M/1223 Cenwave

Cycle: 24, Proposal Category: CAL/COS (Availability Mode: RESTRICTED)

INVESTIGATORS

Name	Institution	E-Mail	
Dr. Andrew J. Fox (PI) (ESA Member) (Contact)	Space Telescope Science Institute - ESA	afox@stsci.edu	
Dr. Steven V. Penton (CoI)	Space Telescope Science Institute	penton@stsci.edu	
Dr. David J. Sahnow (CoI) (Contact)	Space Telescope Science Institute	sahnow@stsci.edu	

VISITS

Visit	Targets used in Visit	Configurations used in Visit	Orbits Used	Last Orbit Planner Run	OP Current with Visit?
01	(1) V-KL-UMA NONE	COS COS/FUV COS/NUV	2	10-May-2017 21:05:37.0	yes
51	(1) V-KL-UMA NONE	COS COS/FUV COS/NUV	2	10-May-2017 21:05:46.0	yes

4 Total Orbits Used

ABSTRACT

This program will determine the optimal focus of the new COS/FUV/G130M/1223 setting at Lifetime Position 4 (LP4) using segment FUVA only. A focus sweep with G130M/1222/FUVB only was conducted at LP4 in program 14527, in the exploratory phase of the LP4 preparations, and the visit design here closely follows that earlier program. The program will scan around the expected best focus value of -350 to -200 from the G130M/1222/LP4 focus, as determined by a ray-trace model prediction.

OBSERVING DESCRIPTION

This program will perform a focus sweep at LP4 with G130M/1222 (FUVA only) and FP-POS=3. An ACQ/IMAGE with BOA/MIRRORA is used to acquire the target. At each position in the focus sweep, the LIFETIME_POS optional parameter is used to set the aperture position and voltages, and the FOCUS optional parameter is used to set the focus position.

The LP4 FSW 1222 focus value is -879. Raytraces suggest that the cenwave is best focused somewhere in the range from -350 to -200 from the 1222 setting, depending on what wavelength the resolving power is maximized. As a result, the pattern is offset from zero so that the focus sweep runs from -1150 to +850, with 100 or 200 focus steps between each exposure.

In absolute focus units, the pattern goes from -879-1150 = -2029 (> -2200, the lower limit) and -879+850 = -29.

At the end of the focus sweep, exposures are taken at an additional FP-POS in order to determine if Lyman-alpha still falls in the gap at the estimated focus position.

	Proposal 14929, G130M_1223_LP4	_focus (01), completed			Thu May 11 01:05:48 GMT 2017
sit	Diagnostic Status: Warning				
i>	Scientific Instruments: COS, COS/FU	JV, COS/NUV			
	Special Requirements: SCHED 100%				
S	(G130M_1223_LP4_focus (01)) War	ning (Form): For the best data quality, it is str	rongly recommended that all four FP-POS positions b	e used when observing	g at a given COS CENWAVE setting.
sti					
ğ					
ığ					
Di					
ts	# Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
ge	(1) V-KL-UMA	RA: 11 47 14.4900 (176.8103750d)	Proper Motion RA: 0.00333 sec of time/yr	V=13.28	Reference Frame: ICRS
Tar	Alt Name1: FEIGE48	Dec: +61 15 31.80 (61.25883d)	Proper Motion Dec: 0		
י ס		Equinox: J2000	Epoch of Position: 2000		
ixe	Comments: This object was generated	d by the targetselector and retrieved from the	SIMBAD database.		
ΪĹ.	Extended=NO				

	#	Label Target	Config Mode Aperture	Spectral Fle	Ont Parame	Special Page	Croups	Evn. Time (Total)/[Actual Dur.]	Orbit
	π	(ETC Run)	Comignitout, aper un e	Spectra 123.	Opt. 1 at anis.	эрсска ксуз.	Groups	Exp. Thire (Total) [Actual Dar.]	Unit
	1	ACQ/IMAG (1) V-KL-UMA	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				16 Secs (16 Secs)	
		E (COS.ta.913 463)						[==>]	[1]
	Con % T % T % T % T % T % T % T % T 2	iments: S/N=60. ACQ/IMAGE. 1 EST_LTAIMAGE: Msrd slew wa EST_LTAIMAGE: Final BOA Fi EST_LTAIMAGE: Final BOA Fi EST_LTAIMAGE: Estimated baa EST_LTAIMAGE: Bck subtracte EST_LTAIMAGE: Bck subtracte Initialization (1) V-KL-UMA	his target has been observed with this co is [AD,XD] = [-0.326,0.769]" nal Pointing ERROR was = [-2.126,1.55 nal Pointing ERROR was = [-0.050,0.05 ckground over image = 3998 ckground over the trimmed image = 410 d counts in first image = 2324; S/N = 4 d counts in second image = 3597; S/N = COS/FUV. TIME-TAG, PSA	onfiguration in 1452 99] p 38] " 8.20 = 59.97 G130M	?7 with the following co	ounts and slew		0 1 Secs (0 1 Secs)	1
	_	Exposure	COD/1 0 1, 11/12 1110, 1 511	1222 A	SEGMENT=A:			I = > I	+
		(COS.sp.913 465)			BUFFER-TIME= 1;	:11			
					LIFETIME-POS= P4;	=L			[1]
					FLASH=NO;				
					WAVECAL=NO				
	Con	uments: Initialization exposure to	set the zero point of the focus sweep to	the G130M/1222/LF	P4 value (absolute post	ition of -879)			
	3	Move to 0-3 NONE	COS, ALIGN/OSM		FOCUS=-350			0 Secs (0 Secs)	+
es	<i>.</i>	50 						[==>]	[1]
iur	Con	<i>iments: Set focus to -550 from in</i>	e G130M/1222 focus position	C120M	ED DOG_2,			100 Saga (100 Saga)	Т
SOC	4	-FPPOS3	COS/FUV, HIVIE-TAO, FSA	1222 A	FF-FU5=5; SECMENT-A			100 Secs (100 Secs)	-
Ж		(COS.sp.913 465)		1222 17	BUFFER-TIME=	:11			
_		(0)			1; LIFETIME-POS= P4	=L			[1]
	Con S IH	uments: 100 seconds gives S/N = IB)	29 @ 1310A. Count rate segment A: 19-	436 cts/sec. Therefor	re buffer fills in 2.35e0	6/19436 = 121 sec. 2/.	3x121=80s, and for 8	$30 < B/T_2/3 < 110$, use 111s for buffer time	? (from CO
	This	s exposure is a standand LP4 C12	222 exposure at the LP4 focus value of -	<u>879-350, taken as a</u>	baseline, but it can be	used in the focus swee	p.		
	5	Move to -80 NONE	COS, ALIGN/OSM		FOCUS=-1150			0 Secs (0 Secs)	
		0-350						[==>]	[1]
	Con	<i>iments: Focus position is -350 - 6</i>	300 = -1150 relative to the G130M/1222	:/LP4 focus					
	6	1222_A_f-8 (1) V-KL-UMA 00	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;			100 Secs (100 Secs)	
		(COS.sp.913		1222 A	SEGMENT=A;	11		[==>]	
		403)			l;	-11			[1]
					LIFETIME-POS= P4	=L			
	7	Move to -60 NONE	COS, ALIGN/OSM		FOCUS=-950			0 Secs (0 Secs)	
		0-350						[==>]	[1]
	Con	ments: Focus position is -350 - (500 = -950 relative to the G130M/1222/	LP4 focus					

ð	1222 A f-6 (1) V-KL-UMA	COS/FUV. TIME-TAG. PSA	G130M	FP-POS=3:	100 Secs (100 Secs)	
			1222 A	SEGMENT=A:	[==>]	
	(COS.sp.913 465)			BUFFER-TIME=11		
				1;		[-
				LIFETIME-POS=L P4		
9	Move to -40 NONE	COS, ALIGN/OSM		FOCUS=-750	0 Secs (0 Secs)	
	0-350				[==>]	[1
Con	nments: Focus position is -350 - 40	0 = -750 relative to the G130M/1222	/LP4 focus			
10	1222_A_f-4 (1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	100 Secs (100 Secs)	
	00 (COS.sp.913		1222 A	SEGMENT=A;	[==>]	
	465)			BUFFER-TIME=11		
						[1]
				P4		
11	Move to -20 NONE	COS, ALIGN/OSM		FOCUS=-550	0 Secs (0 Secs)	
	0-350				[==>]	[1]
Con	nments: Focus position is -350 - 20	0 = -550 relative to the G130M/1222	/LP4 focus			
12	1222_A_f-2 (1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	100 Secs (100 Secs)	
	00 (COS sp 913		1222 A	SEGMENT=A;	[==>]	
	465)			BUFFER-TIME=11 1;		[1
				LIFETIME-POS=L P4		
13	Move to -10 NONE	COS, ALIGN/OSM		FOCUS=-450	0 Secs (0 Secs)	
	0-350				[==>]	[1]
Con	nments: Focus position is -350 - 10	0 = -450 relative to the G130M/1222	/LP4 focus			
14	1222_A_f-1 (1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	100 Secs (100 Secs)	
	(COS.sp.913		1222 A	SEGMENT=A;	[==>]	
	465)			BUFFER-TIME=11		
				I;		[1]
				P4		
15	Move to 0-3 NONE	COS, ALIGN/OSM		FOCUS=-350	0 Secs (0 Secs)	
	50				[==>]	[1]
Con	nments: Focus position is -350 - 0 =	350 relative to the G130M/1222/L	P4 focus			
16	1222_A_f-0 (1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	100 Secs (100 Secs)	
	-FPPOS3 (COS sp 913		1222 A	SEGMENT=A;	[==>]	
	465)			BUFFER-TIME=11		
				1;		[1]
				LIFETIME-POS=L P4		
17	Move to +10 NONE	COS, ALIGN/OSM		FOCUS=-250	0 Secs (0 Secs)	
	0-350	,				

18	1222_A_f+1 (1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	100 Secs (100 Secs)	
	00 (COS sp 913		1222 A	SEGMENT=A;	[==>]	
	465)			BUFFER-TIME=11		
				l;		[1]
				LIFETIME-POS=L P4		
19	Move to $+20$ NONE	COS, ALIGN/OSM		FOCUS=-150	0 Secs (0 Secs)	
	0-350				[==>]	[1]
Con	ments: Focus position is -350 + 20	00 = -150 relative to the G130M/1222	2/LP4 focus			
20	1222_A_f+2 (1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	100 Secs (100 Secs)	
	(COS.sp.913		1222 A	SEGMENT=A;	[==>]	
	465)			BUFFER-TIME=TT 1;		[2]
				LIFETIME-POS=L		
21	Move to +30 NONE	COS ALIGN/OSM		P4 FOCUS- 50		
21	0-350	COS, ALICIVOSM		1000550		[2]
Con	ments: Focus position is -350 + 30	200 = -50 relative to the G130M/1222/	LP4 focus		[>]	[2]
22	1222_A_f+3 (1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	100 Secs (100 Secs)	
	00 (COS sp 913		1222 A	SEGMENT=A;	[==>]	
	465)			BUFFER-TIME=11 1;		[2]
				LIFETIME-POS=L P4		
23	Move to +40 NONE	COS, ALIGN/OSM		FOCUS=+50	0 Secs (0 Secs)	
	0-350				[==>]	[2]
Con	ments: Focus position is -350 + 40	00 = +50 relative to the G130M/1222	2/LP4 focus			
24	1222_A_f+4 (1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	100 Secs (100 Secs)	
	(COS.sp.913		1222 A	SEGMENT=A;	[==>]	
	465)			BUFFER-TIME=11 1;		[2]
				LIFETIME-POS=L P4		
25	Move to +50 NONE	COS, ALIGN/OSM		FOCUS=+150	0 Secs (0 Secs)	
	0-350				[==>]	[2]
Con	<i>ments: Focus position is $-350 + 50$</i>	20 = +150 relative to the G130M/122	22/LP4 focus			
26	1222_A_f+5 (1) V-KL-UMA 00	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	100 Secs (100 Secs)	
	(COS.sp.913		1222 A	SEGMEN I=A; DIFEED TIME_11	[==>]	
	403)			1;		[2]
				LIFETIME-POS=L P4		
27	Move to +60 NONE	COS, ALIGN/OSM		FOCUS=+250	0 Secs (0 Secs)	
	0-350				[==>]	[2]

28	1222_A_f+6 (1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	100 Secs (100 Secs)	
	00 (COS.sp.913 465)		1222 A	SEGMENT=A; BUFFER-TIME=11 1; LIFETIME-POS=L P4	[==>]	[2
29	Move to +80 NONE	COS, ALIGN/OSM		FOCUS=+450	0 Secs (0 Secs)	
	0-350				[==>]	[2]
Con	nments: Focus position is -350 + 80	00 = +450 relative to the G130M/122	2/LP4 focus			
30	1222_A_f+8 (1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	100 Secs (100 Secs)	
	00 (COS.sp.913 465)		1222 A	SEGMENT=A; BUFFER-TIME=11 1; LIFETIME-POS=L P4	[==>]	[2]
31	Move to +10 NONE	COS, ALIGN/OSM		FOCUS=+650	0 Secs (0 Secs)	
	00-350				[==>]	[2]
Con	nments: Focus position is -350 + 10	000 = +650 relative to the G130M/12	222/LP4 focus			
32	1222_A_f+1 (1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	100 Secs (100 Secs)	
	000 (COS.sp.913 465)		1222 A	SEGMENT=A; BUFFER-TIME=11	[==>]	
				1; LIFETIME-POS=L P4		[2]
33	Move to +12 NONE	COS, ALIGN/OSM		FOCUS=+850	0 Secs (0 Secs)	
	00-350				[==>]	[2]
Con	nments: Focus position is -350 + 12	200 = +850 relative to the G130M/12	222/LP4 focus			
34	1222_A_f+1 (1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	100 Secs (100 Secs)	
	200 (COS.sp.913 465)		1222 A	SEGMENT=A; BUFFER-TIME=11	[==>]	
				1; LIFETIME-POS=L P4		[2]
35	Move to 0-3 NONE	COS, ALIGN/OSM		FOCUS=-350	0 Secs (0 Secs)	
	50				[==>]	[2]
Con	nments: Set focus back to -350 from	the G130M/1222 focus position	G 4 2 2 2			
36	1222_A_f-0 (1) V-KL-UMA -FPPOS3	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	100 Secs (100 Secs)	
	(COS.sp.913		1222 A	SEGMENT=A;	[==>]	
	403)			1;		[2]
				LIFETIME-POS=L P4		
Cor	nments: Repeat of the initial referen	nce exposure				
COI	Move to 0-3 NONE	COS, ALIGN/OSM		FOCUS=-350	0 Secs (0 Secs)	
37						

38	1222_A_f-0 (1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=4;	100 Secs (100 Secs)	
	-FPPOS4 (COS sp 913		1222 A	SEGMENT=A;	[==>]	
	465)			BUFFER-TIME=11 1;		[2]
				LIFETIME-POS=L P4		
Com	ments: Exposure at FP-POS=4 to ve	erify that Lyman-alpha will be in the	gap for G130M/122	3		





	Proposal 14	4929, G130M_1223_LP4	_focus (51), implementation			Thu May 11 01:05:48 GMT 2017
sit	Diagnostic	Status: Warning				
٧i	Scientific Ir	nstruments: COS, COS/FU	JV, COS/NUV			
	Special Req	uirements: SCHED 100%				
cs	(G130M_12	223_LP4_focus (51)) War	ning (Form): For the best data quality, it is structure	ongly recommended that all four FP-POS positions b	e used when observing	g at a given COS CENWAVE setting.
sti						
Ö						
ıgı						
۵						
ts	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
.ge	(1)	V-KL-UMA	RA: 11 47 14.4900 (176.8103750d)	Proper Motion RA: 0.00333 sec of time/yr	V=13.28	Reference Frame: ICRS
Tar		Alt Name1: FEIGE48	Dec: +61 15 31.80 (61.25883d)	Proper Motion Dec: 0		
ן ק			Equinox: J2000	Epoch of Position: 2000		
ixe	Comments:	This object was generated	d by the targetselector and retrieved from the	SIMBAD database.		
ΪĹ	Extended=N	NO				

<u> </u>	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	ACQ/IMAG	(1) V-KL-UMA	COS/NUV, ACQ/IMAGE, BOA	MIRRORA		GS ACQ SCENARI		16 Secs (16 Secs)	
		E (COS.ta.913 463)					O BASE1B3		[==>]	[1]
	Con % T % T % T % T % T % T % T	ıments: S/N=60 'EST_LTAIMA('EST_LTAIMA('EST_LTAIMA('EST_LTAIMA('EST_LTAIMA('EST_LTAIMA('EST_LTAIMA(0. ACQ/IMAGE. TI GE: Msrd slew was GE: Final BOA Fir GE: Final BOA Fir GE: Estimated bac. GE: Estimated bac. GE: Bck subtractee GE: Bck subtractee	his target has been observed with this constant of the second start of the second star	onfiguration in 1452 99] p 38] " 8.20 = 59.97	7 with the following cou	ints and slew			
	2	Initialization	(1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;			0.1 Secs (0.1 Secs)	
	l	Exposure (COS sp 913)			1222 A	SEGMENT=A;			[==>]	
	1	465)				BUFFER-TIME=1	1			
						1; LIFETIME-POS=L P4;	<u>.</u>			[1]
						FLASH=NO;				
	1					WAVECAL=NO				
	Con	nments: Initiali	zation exposure to	set the zero point of the focus sweep to	the G130M/1222/LP	94 value (absolute positi	ion of -879)			
	3	Move to 0-3	NONE	COS, ALIGN/OSM		FOCUS=-350			0 Secs (0 Secs)	
S	1	50							[==>]	[1]
ar	Con	nments: Set foc	us to -350 from the	2 G130M/1222 focus position						
วรเ	4	1222_A_f-0	(1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;			100 Secs (100 Secs)	
ğ	l	-FPP055 (COS.sp.913			1222 A	SEGMENT=A;			[==>]	
ш		465)				BUFFER-TIME=1	1			
						1; LIFETIME-POS=L P4	<u>.</u>			[1]
	Con S IH	nments: 100 sec IB)	conds gives $S/N = 2$	29 @ 1310A. Count rate segment A: 194	436 cts/sec. Therefor	re buffer fills in 2.35e6/.	19436 = 121 sec. 2/3x1	21=80s, and for 80 <	$B/T_2/3 < 110$, use 111s for buffer time	(from CO
	This	s exposure is a	sta <u>ndand LP4 C12</u>	222 exposure at the LP4 focus value of -	879 <u>-350, taken as a l</u>	base <u>line, but it can be u</u>	used in the focus sweep.			
	5	Move to -80	NONE	COS, ALIGN/OSM		FOCUS=-1150			0 Secs (0 Secs)	
	1	0-350							[==>]	[1]
	Con	nments: Focus	position is -350 - 8	300 = -1150 relative to the G130M/1222	2/LP4 focus					
	6	1222_A_f-8	(1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;			100 Secs (100 Secs)	
	1	00 (COS.sp.913			1222 A	SEGMENT=A;			[==>]	Т
	1	465)				BUFFER-TIME=1	1			
						1;				[1]
	l					LIFETIME-POS=L P4	-			
	7	Move to -60	NONE	COS, ALIGN/OSM		FOCUS=-950			0 Secs (0 Secs)	
	ľ	0-350							<i>I</i> ==> <i>I</i>	[1]
	Con	nments: Focus	position is -350 - 6	500 = -950 relative to the G130M/1222/	LP4 focus				L ,	
	1		F		5					
	1									
	l									

8	1222 A f-6 (1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	100 Secs (100 Secs)	
			1222 A	SEGMENT=A:	[==>]	
	(COS.sp.913 465)			BUFFER-TIME=11		
				1;		[.
				LIFETIME-POS=L P4		
9	Move to -40 NONE	COS, ALIGN/OSM		FOCUS=-750	0 Secs (0 Secs)	
~	0-350		(T.D. ()		[==>]	[1
10	nments: Focus position is -350 - 40 1222 A f_4 (1) V-KI JIMA	$\frac{0 = -750 \text{ relative to the G130M/1222}}{\text{COS/FUV TIME-TAG PSA}}$	<u>/LP4 focus</u> G130M	EP-POS-3:	100 Secs (100 Secs)	
10	00 00		1222 A	SEGMENT=A:	$\int \frac{100 \text{ Bees}}{100 \text{ Bees}}$	
	(COS.sp.913 465)			BUFFER-TIME=11		
				1;		[1]
				LIFETIME-POS=L P4		
11	Move to -20 NONE	COS, ALIGN/OSM		FOCUS=-550	0 Secs (0 Secs)	
	0-350				[==>]	[1]
Cor	nments: Focus position is -350 - 20	0 = -550 relative to the G130M/1222	/LP4 focus			
12	1222_A_f-2 (1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	100 Secs (100 Secs)	
	(COS.sp.913		1222 A	SEGMENT=A;	[==>]	
	465)			BUFFER-TIME=11 1;		[]
				LIFETIME-POS=L		
12				P4		
13	0-350	COS, ALIGN/OSM		FOCUS=-450	0 Secs (0 Secs)	
Cor	nments: Focus position is 350-10	0 = 450 relative to the C130M/1222	/I PA focus		[==>]	[1]
14	1222 A f-1 (1) V-KL-UMA	COS/FUV TIME-TAG PSA	G130M	FP-POS=3.	100 Secs (100 Secs)	
•••			1222 A	SEGMENT=A:	[==>]	
	(COS.sp.913 465)			BUFFER-TIME=11		
				1;		[1]
				LIFETIME-POS=L P4		
15	Move to 0-3 NONE	COS, ALIGN/OSM		FOCUS=-350	0 Secs (0 Secs)	
	50				[==>]	[1]
Cor	nments: Focus position is -350 - 0 =	= -350 relative to the G130M/1222/L	P4 focus		100 Sees (100 Sees)	
10	-FPPOS3	COS/FUV, TIME-TAG, PSA	1222 A	FF-FOS=5; SEGMENT-A·		
	(COS.sp.913		1222 A	BUEFER-TIME-11	[>]	
	405)			1;		[1]
				LIFETIME-POS=L P4		
17	Move to +10 NONE	COS, ALIGN/OSM		FOCUS=-250	0 Secs (0 Secs)	
	0-350				[==>]	11

18	1222_A_f+1 (1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	100 Secs (100 Secs)	
	00 (COS sp 913		1222 A	SEGMENT=A;	[==>]	
	465)			BUFFER-TIME=11		
						[1]
				LIFETIME-POS=L P4		
19	Move to $+20$ NONE	COS, ALIGN/OSM		FOCUS=-150	0 Secs (0 Secs)	
	0-350				[==>]	[1]
Con	ments: Focus position is -350 + 20	00 = -150 relative to the G130M/1222	2/LP4 focus			
20	1222_A_f+2 (1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	100 Secs (100 Secs)	
	(COS.sp.913		1222 A	SEGMENT=A;	[==>]	
	465)			BUFFER-IIME=II 1;		[2]
				LIFETIME-POS=L		
21	Move to +30 NONE	COS ALIGN/OSM		P4 FOCUS- 50		
21	0-350	COS, ALICIVOSM		1000550		[2]
Con	ments: Focus position is -350 + 30	200 = -50 relative to the G130M/1222/	LP4 focus		[>]	[2]
22	1222_A_f+3 (1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	100 Secs (100 Secs)	
	00 (COS sp 913		1222 A	SEGMENT=A;	[==>]	
	465)			BUFFER-TIME=11 1;		[2]
				LIFETIME-POS=L P4		
23	Move to +40 NONE	COS, ALIGN/OSM		FOCUS=+50	0 Secs (0 Secs)	
	0-350				[==>]	[2]
Con	ments: Focus position is -350 + 40	00 = +50 relative to the G130M/1222	2/LP4 focus			
24	1222_A_f+4 (1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	100 Secs (100 Secs)	
	(COS.sp.913		1222 A	SEGMENT=A;	[==>]	
	465)			BUFFER-TIME=11 1;		[2]
				LIFETIME-POS=L P4		
25	Move to +50 NONE	COS, ALIGN/OSM		FOCUS=+150	0 Secs (0 Secs)	
	0-350				[==>]	[2]
Con	ments: Focus position is -350 + 50	00 = +150 relative to the G130M/122	22/LP4 focus			
26	1222_A_f+5 (1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	100 Secs (100 Secs)	
	(COS.sp.913		1222 A	SEGMENT=A;	[==>]	
	403)			1;		[2]
				LIFETIME-POS=L P4		
27	Move to +60 NONE	COS, ALIGN/OSM		FOCUS=+250	0 Secs (0 Secs)	
	0-350				[==>]	[2]

28	1222_A_f+6 (1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	100 Secs (100 Secs)	
	00 (COS.sp.913 465)		1222 A	SEGMENT=A; BUFFER-TIME=11 1; LIFETIME-POS=L	[==>]	
					-	
						[2]
29	Move to +80 NONE	COS, ALIGN/OSM		FOCUS=+450	0 Secs (0 Secs)	
	0-350				[==>]	[2
Con	nments: Focus position is -350 + 80	200 = +450 relative to the G130M/122	2/LP4 focus		1	
30	1222_A_f+8 (1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	100 Secs (100 Secs)	
	(COS.sp.913		1222 A	SEGMENT=A;	[==>]	
	465)			BUFFER-TIME=11 1;		[2
				LIFETIME-POS=L		
31	Move to +10 NONE	COS, ALIGN/OSM		FOCUS=+650	0 Secs (0 Secs)	
	00-350				[==>]	[2
Con	nments: Focus position is -350 + 10	000 = +650 relative to the G130M/12	22/LP4 focus			
32	1222_A_f+1 (1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	100 Secs (100 Secs)	
	000 (COS.sp.913		1222 A	SEGMENT=A;	[==>]	
	465)			BUFFER-TIME=11 1;		[2
				LIFETIME-POS=L P4		
33	Move to +12 NONE	COS, ALIGN/OSM		FOCUS=+850	0 Secs (0 Secs)	
	00-330				[==>]	[2]
Con	nments: Focus position is $-350 + 12$	200 = +850 relative to the G130M/12	22/LP4 focus			
34	1222_A_f+1 (1) V-KL-UMA 200	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	100 Secs (100 Secs)	
	(COS.sp.913		1222 A	SEGMENT=A;	[==>]	
	403)			1;		[2]
				LIFETIME-POS=L P4		
35	Move to 0-3 NONE	COS, ALIGN/OSM		FOCUS=-350	0 Secs (0 Secs)	
Car	50	the C120M/1222 forms realition			[==>]	[2]
36	1222_A_f-0 (1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	100 Secs (100 Secs)	
	-FPPOS3 (COS.sp.913 465)		1222 A	SEGMENT=A;	[==>]	
				BUFFER-TIME=11 1;		[2]
				LIFETIME-POS=L P4		
Con	nments: Repeat of the initial referer	ice exposure				
37	Move to 0-3 NONE	COS, ALIGN/OSM		FOCUS=-350	0 Secs (0 Secs)	
	50				$I \rightarrow I$	12

38	1222_A_f-0 (1) V-KL-UMA	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=4;	100 Secs (100 Secs)	
	-FPPOS4 (COS sp 913		1222 A	SEGMENT=A;	[==>]	
	465)			BUFFER-TIME=11 1;		[2]
				LIFETIME-POS=L P4		
Com	ments: Exposure at FP-POS=4 to ve	erify that Lyman-alpha will be in the	gap for G130M/122	3		



