

16491 - FUV Focus Sweep Exploratory Program for COS at LP6

Cycle: 28, Proposal Category: CAL/COS (Availability Mode: RESTRICTED)

INVESTIGATORS

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VISITS

Visit	Targets used in Visit	Configurations used in Visit	Orbits Used	Last Orbit Planner Run	OP Current with Visit?
01	(1) FEIGE-48 NONE	COS COS/FUV COS/NUV	2	13-May-2021 09:00:19.0	yes
02	(1) FEIGE-48 NONE	COS COS/FUV COS/NUV	2	13-May-2021 09:00:24.0	yes

Visit	Targets used in Visit	Configurations used in Visit	Orbits Used	Last Orbit Planner Run	OP Current with Visit?
03	(1) FEIGE-48 DARK NONE	COS COS/FUV COS/NUV S/C	2	13-May-2021 09:00:29.0	yes
04	(1) FEIGE-48 NONE	COS COS/FUV COS/NUV	3	13-May-2021 09:00:34.0	yes
05	(1) FEIGE-48 NONE	COS COS/FUV COS/NUV	3	13-May-2021 09:00:38.0	yes
06	(1) FEIGE-48 DARK NONE	COS COS/FUV COS/NUV S/C	3	13-May-2021 09:00:43.0	yes

15 Total Orbits Used

ABSTRACT

This program is designed to search for the best focus for the G130M/1222 and G160M/1600 settings at 7", 9", 11" on the FUV detector as an exploratory program for Lifetime Position 6 (LP6). The focus sweeps are designed to determine the best focus position to within 100 steps, and will scan at 200 focus step increments from -1000 to +1000 relative to the predicted best focuses of -350, 50, and 550 and 650, 1100, 1600 for the G130M/1222 and G160M/1600 settings, respectively, which were determined by extrapolation from adjacent focuses. This strategy is based on several earlier programs (LENA2 program at LP3 - ID 13635; LP4 focus sweep exploratory program - ID 14527; New COS/FUV cenwave focus sweep program - ID 15451), which all executed successfully. We will adjust the focus in steps of 200 as is typical for focus sweeps.

The target for this program is Feige 48, as in previous G130M focus sweeps such as PIDs 14527 and 14874. The exposure times at each step are defined to provide spectra with S/N > 30 in the G130M observations.

OBSERVING DESCRIPTION

Program structure: 6 visits NUV- ACQ/IMAGE - BOA/MIRRORA used in all 6 visits

Aperture moved to LP6_n position

Exposures designed to obtain minimum required S/N (30 / resolution element)

V01 - 03: Feige 48: G130M/1222 sweep at +7", +9", +11"

FUVB focus range: [-1000, +1000] sweep of relative focus in 200 step increments SEE EDITS BELOW

Sweep performed with FUVB only (FUVA off) to optimize the focus at the shorter wavelengths accessible with FUVB alone.

V04 - 06: Feige 48: G160M/1600 sweep at +7", +9", +11"

Visit 04/05: FUVA/B focus range: [-1000, +1000] sweep of relative focus in 200 step increments

Visit 06: FUVA/B focus range: [-1000, +800] sweep of relative focus in 200 step increments SEE EDITS BELOW

Range reduced to prevent passing upper soft stop of focus (+2505)

Wavecals are turned off to mitigate light-leak issues above +5.5" (i.e. WAVECAL=NO, FLASH=NO)

Data need to by-pass calibration and should therefore be unassociated

How are the focus values calculated? As LP6 is not yet defined, all moves are performed relative to LP2, including the aperture placement and focus. Aperture Placement: Placement of the aperture at the three LP6 positions requires the following Optional Parameter / Special Requirement commands:

LP Position on detector POS TARG Y (Difference from LP2) XAPER (Assumes 21 motor steps per ")

LP2	+3.5"	0"	0
LP6_1	+7.0"	+3.5"	-74
LP6_2	+9.0"	+5.5"	-116
LP6_3	+11.0"	+7.5"	-158

Focus: when performing a relative focus sweep of -1000 to +1000 steps across the estimated zero-point focus for the LP6 positions, those focus values are defined relative to the LP2 zero-point. The tables below give:

- a) the absolute zero-point focus value for LP2 and the estimated absolute zero-point focus values across the three LP6 positions.
- b) the relative focus sweep values at LP6 (-1000 to +1000) and the corresponding relative focus values from LP2

LP6 focus step relative to LP2 = LP6 focus step + (LP6 estimated absolute focus - LP2 absolute focus)

c) the resultant absolute focus values for each of the relative focus value moves.

Absolute focus step = LP2 focus + LP6 focus step relative to LP2

G130M/1222

,	A 1 1	1	
a) Absol	liite	Hociis
u	, , , , , , , , , ,	iuic .	I OCUB

a) Hesolate 1 oc	C S			
LP2 LP6_1	L	P6_2	LP6_3	LP6_3_NEW
-81 -350 50	550	550		
b) LP6 Focus st	ep Relative fa	rom LP2		LP6_3_NEW Focus Step
-1000	-540 -140 36	50	-1240	-2600
-800	-340 60 50	60	-840	-2200
-600	-140 260 70	60	-440	-1800
-400	60 460 9	960	-40	-1400
-200	260 660 1	160	160	-1200
0	460 860 1	1360	360	-1000
200	660 1060 1	1560	760	-600
400	860 1260 1	1760	1160	-200
600	1060 1460 1	1960	1560	200
800	1260 1660 2	2160	1960	600
1000	1460 1860 2	2360	2360	1000

c) Absolute from I

-1350	-950 -450	-2050	
-1150	-750 -250	-1650	
-950 -550 -50	-1250		
-750 -350 150	-850		
-550 -150 350	-650		

-350	50 550	-450	
-150	250 750	-50	
50	450 950	350	
250	650 1150	750	
450	850 1350	1150	
650	1050	1550	1550

EDIT 4/26/21: AFTER INITIAL SWEEPS G130M/1222 LP6_1 AND LP6_2, FOCUS SWEEP MINIMA WERE FOUND TO BE VERY NEGATIVE (~-600, -900 RESPSECTIVELY). SWEEP FOCUS VALUES FOR LP6_3 WERE EXTENDED TO ADDRESS CONCERNS THAT FOCUS SWEEP MINIMUM WOULD FALL OUTSIDE GIVEN FOCUS RANGE. UPDATED RELATIVE AND ABSOLUTE FOCUS POSITIONS ARE PROVIDED IN COLUMN 'LP6_3_NEW', WITH THE NEW RELATIVE STEPS RANGING BETWEEN [-2600,+1000] IN 400 STEP INCREMENTS AND 200 STEP INCREMENTS AROUND -1200, THE ESTIMATED FOCUS MINIMUM.

G160M/1600

a) Absolute Focus

LP2	LP6_1	LP6_2	LP6_3	LP6_3_NEW
+116	+650	+1100	+1600	+1600
b) LP6 Focus	step Relative from LP2		LP6_3_N	NEW Focus Step
-1000	-466 -16 484	-916	-2400	
-800	-266 184 684	-516	-2000	
-600	-66 384 884	-116	-1600	
-400	134 584 1084	84	-1400	
-200	334 784 1284	284	-1200	
0	534 984 1484	484	-1000	
200	734 1184 1684	684	-800	
400	934 1384 1884	1084	-400	
600	1134 1584 2084	1484	0	
800	1334 1784 2284	1884	400	
1000	1534 1984 (2484)			

Absolute from LP2
-800
-400
0
200
400
600
800
1200
1600
2000

EDIT 5/05/21: AFTER INITIAL SWEEPS G160M/1600 LP6_1 AND LP6_2, FOCUS SWEEP MINIMA WERE *ALSO* FOUND TO BE VERY NEGATIVE (~-600, -900 RESPSECTIVELY). SWEEP FOCUS VALUES FOR LP6_3 WERE EXTENDED TO ADDRESS CONCERNS THAT FOCUS SWEEP MINIMUM WOULD FALL OUTSIDE GIVEN FOCUS RANGE. UPDATED RELATIVE AND ABSOLUTE FOCUS POSITIONS ARE PROVIDED IN COLUMN 'LP6_3_NEW', WITH THE NEW RELATIVE STEPS RANGING BETWEEN [-2400,+400] IN 400 STEP INCREMENTS AND 200 STEP INCREMENTS AROUND -1200, THE ESTIMATED FOCUS MINIMUM.

EDIT 5/10/21: Additional changes are as follows.

Efforts to remove focus step intolerance issues. Both Visits include focus moves back toward a focus offset of 0. Visit 03 will step back through twelve 200 step intervals from the last observation position, while Visit 06 will step back through two larger intervals. Both visits will then obtain an exposure using a different cenwave at nominal aperture and focus position to attempt to zero out the tolerance issues, as using a different cenwave resets the OSM focus macro for LP2.

Special requirement exposures changing the flag for Focus Step Intolerance. Each Visit includes an early exposure (X.004) that will contain verbiage to increase the tolerance level to 30 steps and dissuade the telescope from giving us a warning about how the focus steps are acting weird. We then include a final exposure at the end of each visit undoing this change, with further verbiage reducing the tolerance level back to 15 steps.

---SPECIAL REQUESTS:

- 1. Turn off calibration for the COS/FUV exposures.
- 2. Disassociate all exposures. SQL is required to perform these actions.

Visit 3 is ON HOLD until the data from visits 1 and 2 is analysed. EDIT 5/12/21: RESUBMITTED TO PROCEED WITH VISIT 03. Visit 6 is OH HOLD until the data from visits 4 and 5 is analysed. EDIT 5/12/21: RESUBMITTED TO PROCEED WITH VISIT 06.

Proposal 16491 - G130M 1222 focus 7arcsec LP6 1 (01) - FUV Focus Sweep Exploratory Program for COS at LP6

Thu May 13 13:00:44 GMT 2021

Proposal 16491, G130M_1222_focus_7arcsec_LP6_1 (01), completed

Diagnostic Status: Warning

Scientific Instruments: COS, COS/FUV, COS/NUV

Special Requirements: SCHED 100% Comments: LP2 Focus: -810 LP6_1 Estimated Focus: -350

LP6 focus step relative to LP2 = LP6 focus step + (LP6 estimated absolute focus - LP2 absolute focus)

Focus points set relative to LP2 for LP6_1:

Focus range relative to LP6 zero-point [-1000,+1000] Focus range relative to LP2 zero-point [-540, +1460]

Absolute focus step = LP2 focus + LP6 focus step relative to LP2

Absolute focus range = [-1350, +650]

Bypass calibration for the COS/FUV exposures.

Disassociate all exposures.

nostics (G130M_1222_focus_7arcsec_LP6_1 (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(G130M_1222_focus_7arcsec_LP6_1 (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE NO ORIENT

Diag
ets

	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
ပ္ပ	(1)	FEIGE-48	RA: 11 47 14.4421 (176.8101754d)	Proper Motion RA: -0.0035937440813851103	V=13.28	Reference Frame: ICRS
ge			Dec: +61 15 31.68 (61.25880d)	sec of time/yr		
Tarç			Equinox: J2000	Proper Motion Dec: -0.007394999965981697 arcsec/yr		
ğ				Epoch of Position: 2015.5		
×i		ts: This object was generated v=CALIBRATION	d by the targetselector and retrieved from the SIMB	AD database.		
		ion=[FOCUS TEST]				

Extended=NO

Proposal 16491 - G130M 1222 focus 7arcsec LP6 1 (01) - FUV Focus Sweep Exploratory Program for COS at LP6

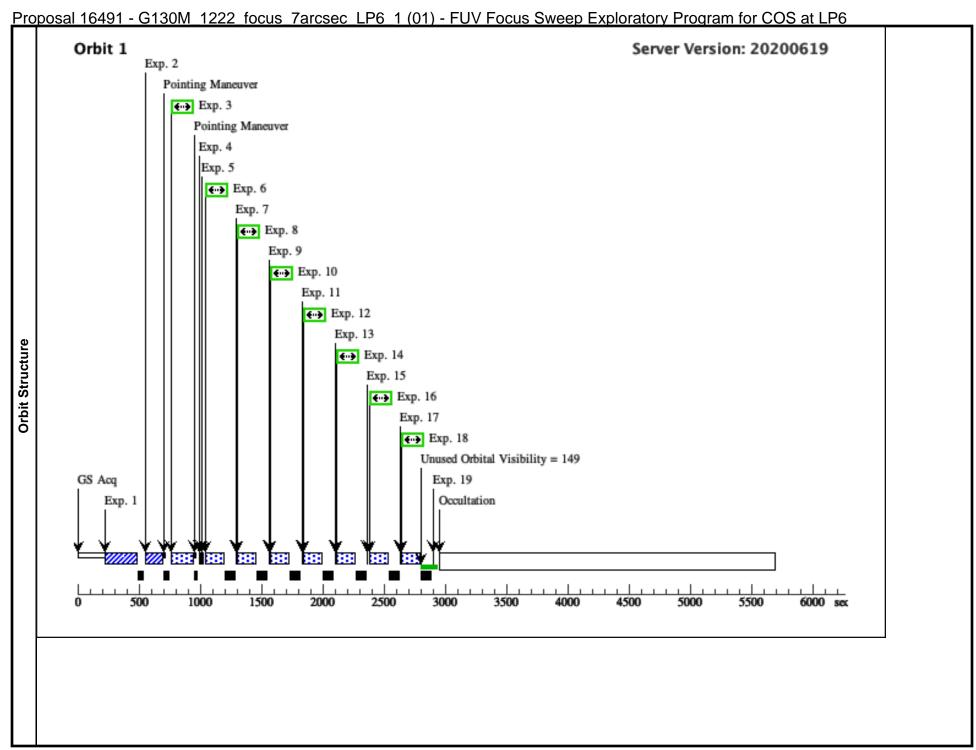
	# Label (ETC Run	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
		G (1) FEIGE-48	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				16 Secs (16 Secs)	
	E (COS.ta.60 556)	07						[==>]	[1]
		G (1) FEIGE-48	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				16 Secs (16 Secs)	
	E (COS.ta.60 556)	07						[==>]	[1]
	3 Initialize G	G1 (1) FEIGE-48	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;			0.1 Secs (0.1 Secs)	
	30M/1222 nominal ap rture and fo	be		1222 A	BUFFER-TIME=1 0;	1		[==>]	
	us position	l			WAVECAL=NO;				
	(COS.sp.60 970)	06			FLASH=NO;				[1]
	ŕ				SEGMENT=B;				
					LIFETIME-POS=L P2	_			
	Comments: This	exposure sets the co	rrect instrument configuration before the	e anerture is moved					
l	4 Place apert	tu NONE	COS, ALIGN/APER	perime is moved	XAPER=-74;			0.0 Secs (0 Secs)	
	re at +7.0 a csec in XD	ar			YAPER=0.0			[==>]	[1]
	Comments: Assu	ımes 21 motor steps į	per " in XAPER.						[-]
	This command m	noves the PSA from +	+3.5" (LP2) to +7.0" (LP6_1) - difference	e of +3.5"					1
res	5 Move to -1 00 (=-540 to		COS, ALIGN/OSM		FOCUS=-540			0 Secs (0 Secs)	
Exposures	lative to 12 2 LP2 focu	22						[==>]	[1]
ф	Comments: G13	0M/1222 focus at LP	22: -810						
ш	G130M/1222 foo	cus at LP6_1: -350							
	-1000 focus at L	P6 using LP5 focus :	= -1000-(-350+810) = -540						
	6 1222_B_f- 000	1 (1) FEIGE-48	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	POS TARG 0.0,+	3.5	100 Secs (100 Secs)	
	(COS.sp.60	07		1222 A	SEGMENT=B;			I = => I	
	559)				BUFFER-TIME=12 9;	2			
					LIFETIME-POS=L				[1]
					P2;	-			1 2-3
					WAVECAL=NO;				
					FLASH=NO				
	Comments: This	exposure time give o	n S/N=30 at 1150						
	Wavecals are tur	rned off to mitigate li	ight-leak issues above +5.5"/(i.e. WAVE	CAL=NO, FLASH=	NO)				
	7 Move to -8	NONE	COS, ALIGN/OSM		FOCUS=-340			0 Secs (0 Secs)	
	0 (=-340 re ative to 122	2						[==>]	
	2 LP2 focu	ıs)							
									[1]
l									
_		_			0				

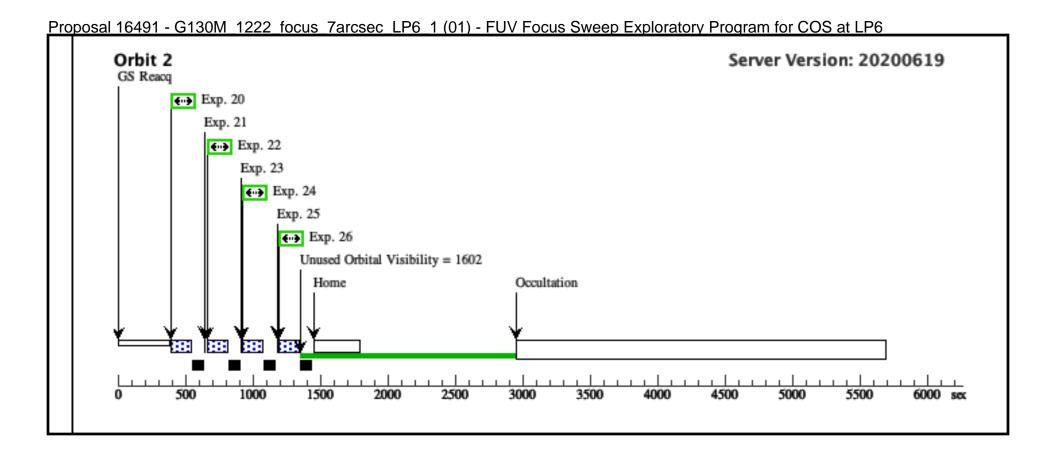
Proposal 16491 - G130M 1222 focus 7arcsec LP6 1 (01) - FUV Focus Sweep Exploratory Program for COS at LP6 1222_B_f-8 (1) FEIGE-48 100 Secs (100 Secs) COS/FUV, TIME-TAG, PSA G130M FP-POS=3; SAME POS AS 6 1222 A SEGMENT=B; [==>] (COS.sp.607 559) BUFFER-TIME=12 LIFETIME-POS=L [1] WAVECAL=NO; FLASH=NO Comments: This exposure time give a S/N=30 at 1150 Move to -60 NONE FOCUS=-140 COS, ALIGN/OSM 0 Secs (0 Secs) 0 (=-140 rel)f = = > 1ative to 122 [1] 2 LP2 focus) 10 1222_B_f-6 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G130M FP-POS=3; SAME POS AS 6 100 Secs (100 Secs) 1222 A f = = > 1SEGMENT=B; (COS.sp.607 BUFFER-TIME=12 559) LIFETIME-POS=L [1] P2: WAVECAL=NO; FLASH=NO Comments: This exposure time give a S/N=30 at 1150 11 Move to -40 NONE COS. ALIGN/OSM FOCUS=+60 0 Secs (0 Secs) 0 = +60 rela*[==>]* tive to 1222 [1] LP2 focus) 12 1222_B_f-4 (1) FEIGE-48 G130M FP-POS=3: SAME POS AS 6 100 Secs (100 Secs) COS/FUV, TIME-TAG, PSA 1222 A SEGMENT=B; [==>](COS.sp.607 BUFFER-TIME=12 559) LIFETIME-POS=L [1] WAVECAL=NO; FLASH=NO Comments: This exposure time give a S/N=30 at 1150 13 Move to -20 NONE COS, ALIGN/OSM FOCUS=+260 0 Secs (0 Secs) 0 (=+260 rel I = = > 1ative to 122 [1] 2 LP2 focus) 14 1222_B_f-2 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G130M FP-POS=3; SAME POS AS 6 100 Secs (100 Secs) 1222 A SEGMENT=B; [==>] (COS.sp.607 559) BUFFER-TIME=12 LIFETIME-POS=L [1] WAVECAL=NO; FLASH=NO Comments: This exposure time give a S/N=30 at 1150

Proposal 16491 - G130M 1222 focus 7arcsec LP6 1 (01) - FUV Focus Sweep Exploratory Program for COS at LP6 COS, ALIGN/OSM FOCUS=+460 Move to 0 (NONE 0 Secs (0 Secs) =+460 relati [==>] ve to 1222 L [1] P2 focus) 1222 B f-0 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G130M FP-POS=3; SAME POS AS 6 100 Secs (100 Secs) (COS.sp.607 1222 A SEGMENT=B; [==>] 559) BUFFER-TIME=12 LIFETIME-POS=L [1] P2; WAVECAL=NO; FLASH=NO Comments: This exposure time give a S/N=30 at 1150 Move to +20 NONE COS, ALIGN/OSM FOCUS=+660 0 Secs (0 Secs) 0 = +660 relI = = > 1ative to 122 [1] 2 LP2 focus) 18 1222_B_f+2 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G130M FP-POS=3; SAME POS AS 6 100 Secs (100 Secs) 1222 A SEGMENT=B; [==>] (COS.sp.607 559) BUFFER-TIME=12 9; LIFETIME-POS=L [1] WAVECAL=NO: FLASH=NO Comments: This exposure time give a S/N=30 at 1150 Move to +40 NONE FOCUS=+860 0 Secs (0 Secs) COS, ALIGN/OSM 0 = +860 rel[==>] ative to 122 [1] 2 LP2 focus) 20 1222_B_f+4 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G130M FP-POS=3: SAME POS AS 6 100 Secs (100 Secs) 1222 A SEGMENT=B: I = = > 1(COS.sp.607 BUFFER-TIME=12 LIFETIME-POS=L [2] WAVECAL=NO; FLASH=NO Comments: This exposure time give a S/N=30 at 1150 Move to +60 NONE COS, ALIGN/OSM FOCUS=+1060 0 Secs (0 Secs) 0 = +1060 r[==>] elative to 12 22 LP2 focu [2]

Proposal 16491 - G130M 1222 focus 7arcsec LP6 1 (01) - FUV Focus Sweep Exploratory Program for COS at LP6

		1222 TOCUS / AFCSEC L					
22	1222_B_f+6 (1) FEIGE-48 00	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	SAME POS AS 6	100 Secs (100 Secs)	
	(COS.sp.607		1222 A	SEGMENT=B;		[==>]	
	559)			BUFFER-TIME=12 9;	2		
				LIFETIME-POS=L			[2]
				P2;			12
				WAVECAL=NO;			
				FLASH=NO			
Con	ments: This exposure time give a	S/N=30 at 1150					
23	Move to +80 NONE	COS, ALIGN/OSM		FOCUS=+1260		0 Secs (0 Secs)	
	0 (=+1260 r elative to 12					[==>]	
	22 LP2 focu s)						[2
24	1222_B_f+8 (1) FEIGE-48	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	SAME POS AS 6	100 Secs (100 Secs)	
	00 (COS.sp.607		1222 A	SEGMENT=B;		[==>]	
	559)			BUFFER-TIME=12	2		
				9;			
				LIFETIME-POS=L P2;			[2
				WAVECAL=NO;			
				FLASH=NO			
Con	nments: This exposure time give a	S/N = 30 at 1150		1 LASII-NO			
	Move to +10 NONE	COS, ALIGN/OSM		FOCUS=+1460		0 Secs (0 Secs)	
	00 (=+1460	, , , , , , , , , , , , , , , , , , , ,				[==>1	
	relative to 1 222 LP2 foc						[2
	us)						
26	1222_B_f+1 (1) FEIGE-48	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	SAME POS AS 6	100 Secs (100 Secs)	
	000 (COS.sp.607		1222 A	SEGMENT=B;		[==>]	
	559)			BUFFER-TIME=12	2		
				9;			
				LIFETIME-POS=L P2;			[2
				WAVECAL=NO;			
				· ·			
				FLASH=NO			





Proposal 16491 - G130M 1222 focus 9arcsec LP6 2 (02) - FUV Focus Sweep Exploratory Program for COS at LP6

Thu May 13 13:00:44 GMT 2021

Proposal 16491, G130M_1222_focus_9arcsec_LP6_2 (02), completed

Diagnostic Status: Warning

Scientific Instruments: COS, COS/FUV, COS/NUV

Special Requirements: SCHED 100% Comments: LP2 Focus: -810 LP6_2 Estimated Focus: +50

sit

LP6 focus step relative to LP2 = LP6 focus step + (LP6 estimated absolute focus - LP2 absolute focus)

Focus points set relative to LP2 for LP6_2:

Focus range relative to LP6 zero-point [-1000,+1000] Focus range relative to LP2 zero-point [-140, +1860]

Absolute focus step = LP2 focus + LP6 focus step relative to LP2

Absolute focus range = [-950, +1050]

- Bypass calibration for the COS/FUV exposures.

Disassociate all exposures.

Diagnostics

(G130M_1222_focus_9arcsec_LP6_2 (02)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(G130M_1222_focus_9arcsec_LP6_2 (02)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE NO ORIENT

	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
က္က	(1)	FEIGE-48	RA: 11 47 14.4421 (176.8101754d)	Proper Motion RA: -0.0035937440813851103	V=13.28	Reference Frame: ICRS
get			Dec: +61 15 31.68 (61.25880d)	sec of time/yr		
Tarç			Equinox: J2000	Proper Motion Dec: -0.007394999965981697 arcsec/yr		
ਕ੍ਰੀ				Epoch of Position: 2015.5		
Ĕ	Comments: Category=0	This object was generated (CALIBRATION	by the targetselector and retrieved from the SIMBA	AD database.		
		=[FOCUS TEST]				

Proposal 16491 - G130M 1222 focus 9arcsec LP6 2 (02) - FUV Focus Sweep Exploratory Program for COS at LP6

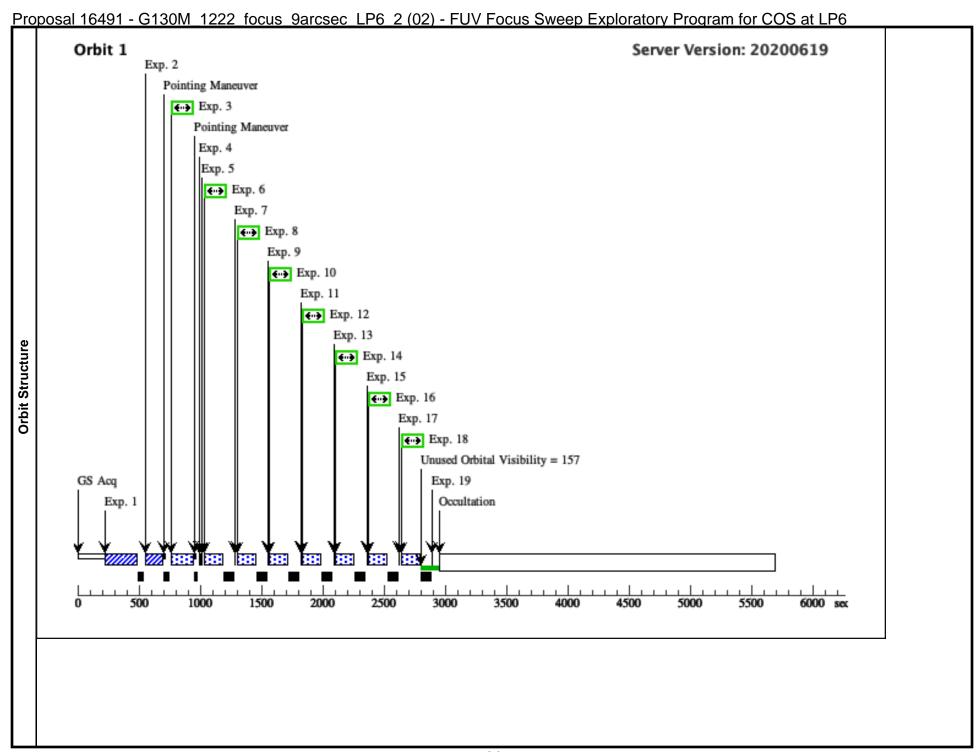
ACQUIMAG (1) FHIGE-48 COS:NUV, ACQUIMAGE, ROA MIRRORA 16 Ness (16 Ness)	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
COS ta 607	1	ACQ/IMAG	(1) FEIGE-48	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				16 Secs (16 Secs)	
		(COS.ta.607							[==>]	[1]
COS sta 607	2		(1) FEIGE-48	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				16 Secs (16 Secs)	
SOM/1222 at nominal ape trute and foc		(COS.ta.607							[==>]	[1]
1222 A DUFFER-HIME=11	3			COS/FUV, TIME-TAG, PSA		*				
Use position (COS.9.6.96 FLASH=NO; FLASH=NO; SEGMENT=B; LIFETIME-POS=L P2 P3 P4 P4 P4 P5 P5 P5 P5 P5		nominal ape			1222 A		l		[==>]	
SEGMENT=B; LIFETIME-POS=L		us position				WAVECAL=NO;				
LIFETIME-POS=L		(COS.sp.606 970)				FLASH=NO;				[1]
P2		,								
4 Place apertu NONE COS, ALIGN/APER XAPER=116; re at +9.0 ar sex in XD										
Comments: Assumes 21 motor steps per " in XAPER. This command moves the PSA from +3.5" (LP2) to +9.0" (LP6_2) - difference of +5.5"	Con				e aperture is moved.				0.00	
Comments: Assumes 21 motor steps per " in XAPER. This command moves the PSA from +3.5" (LP2) to +9.0" (LP6_2) - difference of +5.5"	4	re at +9.0 ar	NONE	COS, ALIGN/APER					· · · · · · · · · · · · · · · · · · ·	
This command moves the PSA from +5.5" (LP2) to +9.0" (LP6_2) - difference of +5.5"	_					YAPER=0.0			[==>]	[1]
Some to -10 None Cos, Align/osm Focus=140	Con This	nments: Assum command mov	es 21 motor steps p ves the PSA from +.	oer " in XAPER. 3.5" (LP2) to +9.0" (LP6_2) - differenc	e of +5.5"					
lative to 122 2 LP2 focus		Move to -10				FOCUS=-140			0 Secs (0 Secs)	
G130M/1222 focus at LP6_2: +50 -1000 focus at LP6 using LP5 focus = -1000-(50+880) = -70 6 1222 B_f-1 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G130M FP-POS=3; POS TARG 0.0,+5.5 100 Secs (100 Secs) (COS.sp.607 S59) 8 UFFER-TIME=12 9; LIFETIME-POS=L P2; WAVECAL=NO; FLASH=NO Comments: This exposure time give a S/N=30 at 1150 Wavecals are turned off to mitigate light-leak issues above +5.5"/(i.e. WAVECAL=NO, FLASH=NO) 7 Move to -80 NONE COS, ALIGN/OSM FOCUS=+60 0 (=+60 rela tive to 1222	5 Con	lative to 122							[==>]	[1]
-1000 focus at LP6 using LP5 focus = -1000-(50+880) = -70 6 1222_B_f-1 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G130M FP-POS=3; POS TARG 0.0,+5.5 100 Secs (100 Secs) (COS.sp.607 S59) BUFFER-TIME=12 9; LIFETIME-POS=L P2; WAVECAL=NO; FLASH=NO Comments: This exposure time give a S/N=30 at 1150 Wavecals are turned off to mitigate light-leak issues above +5.5"/(i.e. WAVECAL=NO, FLASH=NO) 7 Move to -80 NONE COS, ALIGN/OSM FOCUS=+60 0 (=+60 rela tive to 1222	Con	nments: G130M	1/1222 focus at LP2	2: -880						
6 1222_B_f-1 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G130M FP-POS=3; POS TARG 0.0,+5.5 100 Secs (100 Secs) (COS.sp.607 559) 8 UFFER-TIME=12 9; LIFETIME-POS=L P2; WAVECAL=NO; FLASH=NO Comments: This exposure time give a S/N=30 at 1150 Wavecals are turned off to mitigate light-leak issues above +5.5"/(i.e. WAVECAL=NO, FLASH=NO) 7 Move to -80 NONE COS, ALIGN/OSM FOCUS=+60 0 (=+60 rela tive to 1222		30M/1222 focus	s at LP6_2: +50							
000	-100								T	
BUFFER-TIME=12 9;	6		(1) FEIGE-48	COS/FUV, TIME-TAG, PSA		*	POS TARG 0.0,+	5.5	·	
9;		(COS.sp.607			1222 A)		[==>]	
P2; WAVECAL=NO; FLASH=NO		337)					-			
WAVECAL=NO; FLASH=NO Comments: This exposure time give a S/N=30 at 1150 Wavecals are turned off to mitigate light-leak issues above +5.5"/(i.e. WAVECAL=NO, FLASH=NO) 7 Move to -80 NONE COS, ALIGN/OSM FOCUS=+60 0 (=+60 rela tive to 1222)										[1]
Comments: This exposure time give a S/N=30 at 1150 Wavecals are turned off to mitigate light-leak issues above +5.5"/(i.e. WAVECAL=NO, FLASH=NO) 7 Move to -80 NONE COS, ALIGN/OSM FOCUS=+60 0 (=+60 rela tive to 1222						· · · · · · · · · · · · · · · · · · ·				
Wavecals are turned off to mitigate light-leak issues above +5.5"/(i.e. WAVECAL=NO, FLASH=NO) 7 Move to -80 NONE COS, ALIGN/OSM FOCUS=+60 0 (=+60 rela tive to 1222						FLASH=NO				
7 Move to -80 NONE COS, ALIGN/OSM FOCUS=+60 0 (=+60 rela tive to 1222	Con	nments: This ex	posure time give a	S/N=30 at 1150						
0 (=+60 rela tive to 1222	Wav				CAL=NO, FLASH=					
tive to 1222 $I^{==>I}$	7	0 = +60 rela	NONE	COS, ALIGN/OSM		FOCUS=+60				
		tive to 1222							[==>]	
										[1]
										[1]

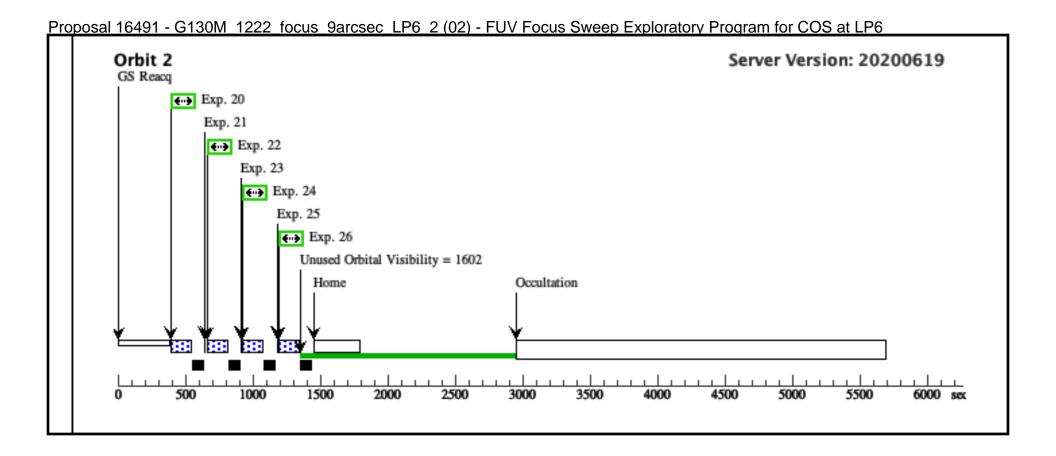
Proposal 16491 - G130M 1222 focus 9arcsec LP6 2 (02) - FUV Focus Sweep Exploratory Program for COS at LP6 1222_B_f-8 (1) FEIGE-48 100 Secs (100 Secs) COS/FUV, TIME-TAG, PSA G130M FP-POS=3; SAME POS AS 6 1222 A SEGMENT=B; [==>] (COS.sp.607 559) BUFFER-TIME=12 LIFETIME-POS=L [1] WAVECAL=NO; FLASH=NO Comments: This exposure time give a S/N=30 at 1150 Move to -60 NONE FOCUS=+260 COS, ALIGN/OSM 0 Secs (0 Secs) 0 = +260 relf = = > 1ative to 122 [1] 2 LP2 focus) 10 1222_B_f-6 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G130M FP-POS=3; SAME POS AS 6 100 Secs (100 Secs) 1222 A SEGMENT=B; f = = > 1(COS.sp.607 BUFFER-TIME=12 559) LIFETIME-POS=L [1] P2: WAVECAL=NO; FLASH=NO Comments: This exposure time give a S/N=30 at 1150 11 Move to -40 NONE COS. ALIGN/OSM FOCUS=+460 0 Secs (0 Secs) 0 = +460 rel*[==>]* ative to 122 [1] 2 LP2 focus) 12 1222_B_f-4 (1) FEIGE-48 G130M FP-POS=3: SAME POS AS 6 100 Secs (100 Secs) COS/FUV, TIME-TAG, PSA 1222 A SEGMENT=B; [==>](COS.sp.607 BUFFER-TIME=12 559) LIFETIME-POS=L [1] WAVECAL=NO; FLASH=NO Comments: This exposure time give a S/N=30 at 1150 13 Move to -20 NONE COS, ALIGN/OSM FOCUS=+660 0 Secs (0 Secs) 0 (=+660 rel I = = > 1ative to 122 [1] 2 LP2 focus) 14 1222_B_f-2 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G130M FP-POS=3; SAME POS AS 6 100 Secs (100 Secs) 1222 A SEGMENT=B; [==>] (COS.sp.607 559) BUFFER-TIME=12 LIFETIME-POS=L [1] WAVECAL=NO; FLASH=NO Comments: This exposure time give a S/N=30 at 1150

Proposal 16491 - G130M 1222 focus 9arcsec LP6 2 (02) - FUV Focus Sweep Exploratory Program for COS at LP6 FOCUS=+860 Move to 0 (NONE COS, ALIGN/OSM 0 Secs (0 Secs) =+860 relati [==>] ve to 1222 L [1] P2 focus) 1222 B f-0 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G130M FP-POS=3; SAME POS AS 6 100 Secs (100 Secs) (COS.sp.607 1222 A SEGMENT=B; f = = > 1559) BUFFER-TIME=12 LIFETIME-POS=L [1] P2; WAVECAL=NO; FLASH=NO Comments: This exposure time give a S/N=30 at 1150 Move to +20 NONE COS, ALIGN/OSM FOCUS=+1060 0 Secs (0 Secs) 0 = +1060 rf = = > 1elative to 12 [1] 22 LP2 focu 18 1222_B_f+2 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G130M FP-POS=3; SAME POS AS 6 100 Secs (100 Secs) 1222 A SEGMENT=B; [==>] (COS.sp.607 559) BUFFER-TIME=12 LIFETIME-POS=L [1] WAVECAL=NO; FLASH=NO Comments: This exposure time give a S/N=30 at 1150 Move to +40 NONE FOCUS=1260 COS, ALIGN/OSM 0 Secs (0 Secs) 0 = +1260 r[==>] elative to 12 [1] 22 LP2 focu 1222_B_f+4 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G130M FP-POS=3; 100 Secs (100 Secs) SAME POS AS 6 1222 A SEGMENT=B; *[==>1* (COS.sp.607 BUFFER-TIME=12 559) LIFETIME-POS=L [2] P2; WAVECAL=NO; FLASH=NO Comments: This exposure time give a S/N=30 at 1150 Move to +60 NONE COS, ALIGN/OSM FOCUS=+1460 0 Secs (0 Secs) 0 = +1460 r*[==>1* elative to 12 22 LP2 focu [2]

Proposal 16491 - G130M 1222 focus 9arcsec LP6 2 (02) - FUV Focus Sweep Exploratory Program for COS at LP6

~~	<u> </u>	1222 focus 9arcsec L	(
	1222_B_f+6 (1) FEIGE-48 00 (COS.sp.607	COS/FUV, TIME-TAG, PSA	G130M 1222 A	FP-POS=3; SEGMENT=B;	SAME POS AS 6	100 Secs (100 Secs) [==>]	
	559)			BUFFER-TIME=12 9;	!		
				LIFETIME-POS=L P2;			[2
				WAVECAL=NO;			
C	This was the same of the same	CAL 20 - 1150		FLASH=NO			
	ments: This exposure time give a Move to +80 NONE	COS, ALIGN/OSM		FOCUS=+1660		0 Secs (0 Secs)	
	0 (=+1660 r elative to 12 22 LP2 focu s)					[==>]	[2
24	1222_B_f+8 (1) FEIGE-48	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	SAME POS AS 6	100 Secs (100 Secs)	
	00 (COS.sp.607 559)		1222 A	SEGMENT=B; BUFFER-TIME=12 9;		[==>]	
				LIFETIME-POS=L P2;			[2
				WAVECAL=NO; FLASH=NO			
Com	ments: This exposure time give a	S/N=30 at 1150					-
25	Move to +10 NONE 00 (=+1860	COS, ALIGN/OSM		FOCUS=+1860		0 Secs (0 Secs)	
	relative to 1 222 LP2 foc					[==>]	[2
	us)						
	us) 1222_B_f+1 (1) FEIGE-48	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	SAME POS AS 6	100 Secs (100 Secs)	
	us) 1222_B_f+1 (1) FEIGE-48 000 (COS.sp.607	COS/FUV, TIME-TAG, PSA	G130M 1222 A	SEGMENT=B;		100 Secs (100 Secs) [==>]	
	us) 1222_B_f+1 (1) FEIGE-48 000	COS/FUV, TIME-TAG, PSA		,			
	us) 1222_B_f+1 (1) FEIGE-48 000 (COS.sp.607	COS/FUV, TIME-TAG, PSA		SEGMENT=B; BUFFER-TIME=12			[2
	us) 1222_B_f+1 (1) FEIGE-48 000 (COS.sp.607	COS/FUV, TIME-TAG, PSA		SEGMENT=B; BUFFER-TIME=12 9; LIFETIME-POS=L			[2





Proposal 16491 - G130M 1222 focus 11arcsec LP6 3 (03) - FUV Focus Sweep Exploratory Program for COS at LP6

Thu May 13 13:00:45 GMT 2021

Proposal 16491, G130M_1222_focus_11arcsec_LP6_3 (03), implementation

Diagnostic Status: Error

Scientific Instruments: S/C, COS, COS/FUV, COS/NUV

Special Requirements: SCHED 100% Comments: LP2 Focus: -810 LP6_3 Estimated Focus: +550

LP6 focus step relative to LP2 = LP6 focus step + (LP6 estimated absolute focus - LP2 absolute focus)

Focus points set relative to LP2 for LP6_3:

Focus range relative to LP6 zero-point [-1000,+1000] Focus range relative to LP2 zero-point [+360, +2360]

Absolute focus step = LP2 focus + LP6 focus step relative to LP2

Absolute focus range = [-450, +1550]

- Bypass calibration for the COS/FUV exposures.
- Disassociate all exposures.

Visit 3 is ON HOLD until the data from visits 1 and 2 is analysed.

iagnostics	The value chosen is (Move to +2160 rel The value chosen is	s outside the legal ran lative to 1222 LP2 foo s outside the legal ran	2 LP2 focus) (03.026)) Error (Form): This attributes: Range = [-2000.0 2000.0] increment 1.0 cus (03.028)) Error (Form): This attribute cannot be: Range = [-2000.0 2000.0] increment 1.0 (03)) Warning (Orbit Planner): POS TARG OUTS	have this value due to other choices: Optional_Pa		50.
	, – –		(03)) Warning (Orbit Planner): POS TARG OUTS			
	# Name	,	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
ts	(1) FEIGE	1) FEIGE-48 RA: 11 47 14.4421 (176.8101754d)		Proper Motion RA: -0.0035937440813851103	V=13.28	Reference Frame: ICRS
	Dec: +6					
1 %]	Dec: +61 15 31.68 (61.25880d)	sec of time/yr		
Targe			Dec: +61 15 31.68 (61.25880d) Equinox: J2000	sec of time/yr Proper Motion Dec: -0.007394999965981697 arcsec/yr		
<u>a</u> .			Dec: +01 15 31.08 (01.25880d)	Proper Motion Dec: -0.007394999965981697		

Description=[FOCUS TEST]

Extended=NO

Proposal 16491 - G130M 1222 focus 11arcsec LP6 3 (03) - FUV Focus Sweep Exploratory Program for COS at LP6

	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	ACQ/IMAG	(1) FEIGE-48	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				16 Secs (16 Secs)	
		E (COS.ta.607 556)							[==>]	[1]
	2		(1) FEIGE-48	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				16 Secs (16 Secs)	
		E (COS.ta.607 556)							[==>]	[1]
	3		(1) FEIGE-48	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;			0.1 Secs (0.1 Secs)	
		30M/1222 at nominal ape			1222 A	BUFFER-TIME=11 0;			[==>]	
		rture and foc us position				WAVECAL=NO;				
		(COS.sp.606 970)				FLASH=NO;				[1]
		<i>)</i> 10)				SEGMENT=B;				
						LIFETIME-POS=L P2				
	Com			ct instrument configuration before the	aperture is moved.		a aor			
	4	Change the Focus Step I	DARK	S/C, DATA, NONE			SAA CONTOUR 31 SPEC COM INSTR	7	2 Secs (2 Secs) [==>]	
		ntolerance to 30					ELSETFOCTOL;		[>]	[1]
							QESIPARM POSTO L 30)		[1]
res				re to set the focus step intolerance leve	el higher and preven		ing raised.			
Su	5	Place apertu re at +11.0 a	NONE	COS, ALIGN/APER		XAPER=-158;			0.0 Secs (0 Secs)	
Exposures		resec in XD				YAPER=0.0			[==>]	[1]
ш	Com This	nments: Assume command mov	es 21 motor steps per ves the PSA from +3.5	" in XAPER. 5" (LP2) to +11.0" (LP6_3) = differenc	ce of +7.5"					
	6	Move to -26		COS, ALIGN/OSM		FOCUS=-1240			0 Secs (0 Secs)	
		00 (=-1240 r elative to 12 22 LP2 focu							[==>]	[1]
	Com	s) ments: G130M	1/1222 focus at LP2: -	-810						
			at LP6_3: +550	010						
		v	_	oal focus offset + difference between L	P2 and (estimated)	LP6 3 absolute focii = -	-2600 + (550+810) =	-1240		
	7	1222_B_f-2	(1) FEIGE-48	COS/FUV, TIME-TAG, PSA	G130M	FP-POS=3;	POS TARG 0.0,+7.5		100 Secs (100 Secs)	
		600 (COS.sp.607			1222 A	SEGMENT=B;			[==>]	
		559) ¹				BUFFER-TIME=12 9;				
						LIFETIME-POS=L P2;				[1]
						WAVECAL=NO;				
						FLASH=NO				
	Com	ments: This ex	posure time give a S/I	N=30 at 1150						
	Wav	ecals are turne	ed off to mitigate light	t-leak issues above +5.5"/(i.e. WAVEC	AL=NO, $FLASH=N$	(O)				

Proposal 16491 - G130M 1222 focus 11arcsec LP6 3 (03) - FUV Focus Sweep Exploratory Program for COS at LP6 COS, ALIGN/OSM FOCUS=-840 Move to -22 NONE 0 Secs (0 Secs) 00 = -840 re[==>] lative to 122 [1] 2 LP2 focus) 1222 B f-2 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G130M FP-POS=3; SAME POS AS 7 100 Secs (100 Secs) 200 1222 A SEGMENT=B; [==>] (COS.sp.607 559) BUFFER-TIME=12 LIFETIME-POS=L [1] P2; WAVECAL=NO; FLASH=NO Comments: This exposure time give a S/N=30 at 1150 10 Move to -18 NONE COS, ALIGN/OSM FOCUS=-440 0 Secs (0 Secs) 00 = -440 reI = = > 1lative to 122 [1] 2 LP2 focus) 11 1222_B_f-1 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G130M FP-POS=3; SAME POS AS 7 100 Secs (100 Secs) 800 1222 A SEGMENT=B; [==>] (COS.sp.607 559) BUFFER-TIME=12 9; LIFETIME-POS=L [1] WAVECAL=NO: FLASH=NO Comments: This exposure time give a S/N=30 at 1150 12 Move to -14 NONE FOCUS=-40 0 Secs (0 Secs) COS, ALIGN/OSM 00 = -40 rel[==>] ative to 122 [1] 2 LP2 focus) 13 1222_B_f-1 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G130M FP-POS=3: SAME POS AS 7 100 Secs (100 Secs) 400 1222 A SEGMENT=B: I = = > 1(COS.sp.607 BUFFER-TIME=12 LIFETIME-POS=L [1] WAVECAL=NO; FLASH=NO Comments: This exposure time give a S/N=30 at 1150 14 Move to -12 NONE COS, ALIGN/OSM FOCUS=+160 0 Secs (0 Secs) 00 = +160 r[==>] elative to 12 22 LP2 focu [1]

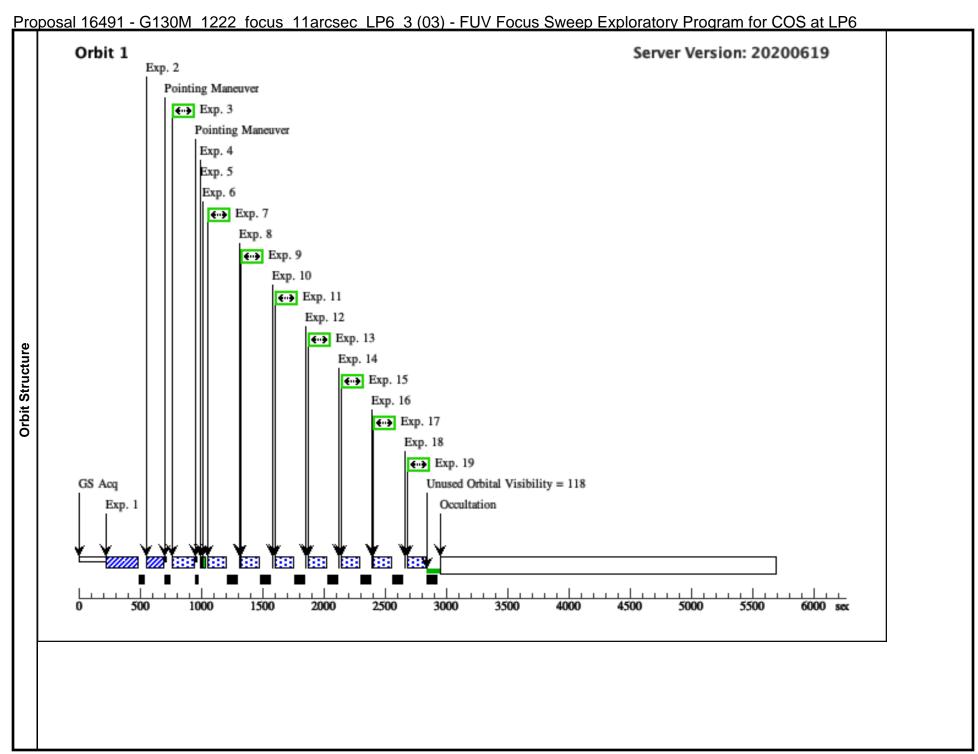
Proposal 16491 - G130M 1222 focus 11arcsec LP6 3 (03) - FUV Focus Sweep Exploratory Program for COS at LP6 1222_B_f-1 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G130M FP-POS=3; SAME POS AS 7 100 Secs (100 Secs) 200 1222 A SEGMENT=B; [==>] (COS.sp.607 559) BUFFER-TIME=12 LIFETIME-POS=L [1] WAVECAL=NO; FLASH=NO Comments: This exposure time give a S/N=30 at 1150 Move to -10 NONE FOCUS=+360 COS, ALIGN/OSM 0 Secs (0 Secs) 00 (=+360 r)[==>] elative to 12 [1] 22 LP2 focu 1222_B_f-1 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G130M FP-POS=3; 100 Secs (100 Secs) SAME POS AS 7 1222 A SEGMENT=B; f = = > 1(COS.sp.607 BUFFER-TIME=12 559) LIFETIME-POS=L [1] P2; WAVECAL=NO; FLASH=NO Comments: This exposure time give a S/N=30 at 1150 18 Move to -60 NONE COS, ALIGN/OSM FOCUS=+760 0 Secs (0 Secs) 0 = +760 rel*[==>1* ative to 122 [1] 2 LP2 focus) 19 1222_B_f-6 (1) FEIGE-48 100 Secs (100 Secs) COS/FUV, TIME-TAG, PSA G130M FP-POS=3; SAME POS AS 7 1222 A SEGMENT=B; [==>] (COS.sp.607 559) BUFFER-TIME=12 LIFETIME-POS=L [1] WAVECAL=NO: FLASH=NO Comments: This exposure time give a S/N=30 at 1150 20 Move to -20 NONE COS, ALIGN/OSM FOCUS=+1160 0 Secs (0 Secs) 0 = +1160 r*[==>]* elative to 12 [2] 22 LP2 focu 21 1222_B_f-2 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G130M FP-POS=3; SAME POS AS 7 100 Secs (100 Secs) 1222 A SEGMENT=B; I = = > 1(COS.sp.607 559) BUFFER-TIME=12 LIFETIME-POS=L [2] WAVECAL=NO; FLASH=NO Comments: This exposure time give a S/N=30 at 1150

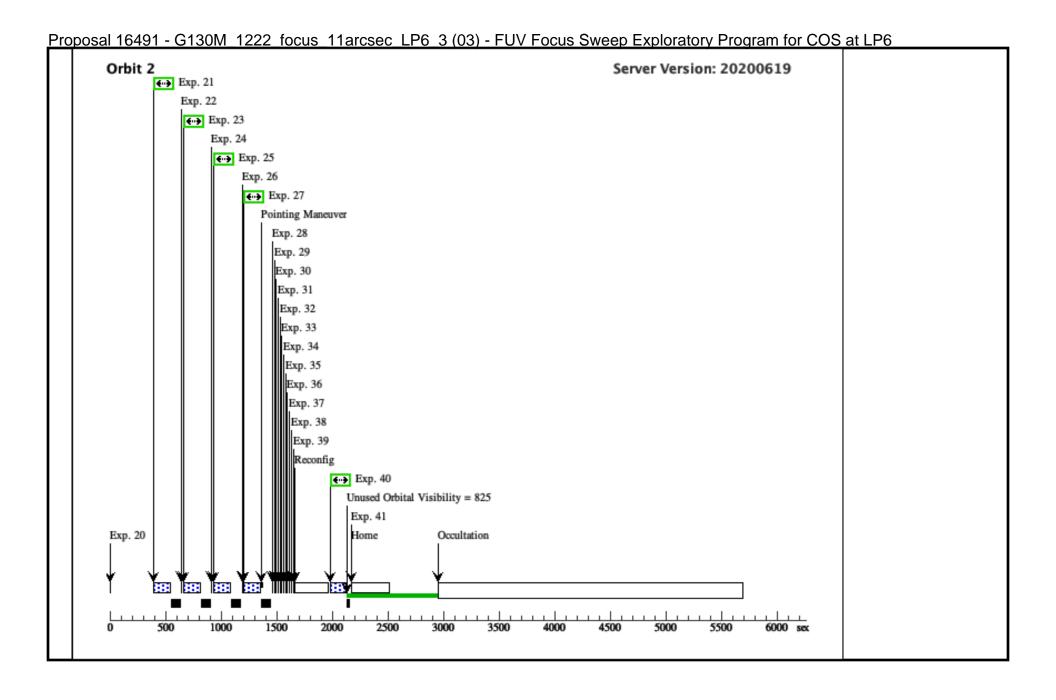
Proposal 16491 - G130M 1222 focus 11arcsec LP6 3 (03) - FUV Focus Sweep Exploratory Program for COS at LP6 COS, ALIGN/OSM Move to +20 NONE FOCUS=+1560 0 Secs (0 Secs) 0 = +1560 r[==>] elative to 12 [2] 22 LP2 focu 23 1222_B_f+2 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G130M FP-POS=3; SAME POS AS 7 100 Secs (100 Secs) 1222 A SEGMENT=B; *[==>1* (COS.sp.607 559) BUFFER-TIME=12 LIFETIME-POS=L [2] P2; WAVECAL=NO; FLASH=NO Comments: This exposure time give a S/N=30 at 1150 COS, ALIGN/OSM FOCUS=+1960 0 Secs (0 Secs) Move to +60 NONE 0 (=+1960 r *[==>1* elative to 12 [2] 22 LP2 focu Comments: Error flag for the focus value being outside the legal range: Range = [-2000.0 2000.0] is incorrect as the focus offset remains within the absolute focus range and does not pass the upper soft stop of focus +2505). See proposal description for more information. 1222_B_f+6 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G130M FP-POS=3; SAME POS AS 7 100 Secs (100 Secs) 1222 A SEGMENT=B; I = = > 1(COS.sp.607 BUFFER-TIME=12 559) LIFETIME-POS=L [2] P2: WAVECAL=NO; FLASH=NO Comments: This exposure time give a S/N=30 at 1150 Move to +10 NONE COS. ALIGN/OSM FOCUS=+2360 0 Secs (0 Secs) 00 (=+2360*[==>]* relative to 1 [2] 222 LP2 foc Comments: Error flag for the focus value being outside the legal range: Range = [-2000.0 2000.0] is incorrect as the focus offset remains within the absolute focus range and does not pass the upper soft stop of focus +2505). See proposal description for more information. 1222 B f+1 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G130M FP-POS=3; SAME POS AS 7 100 Secs (100 Secs) 000 1222 A SEGMENT=B; f = = > 1(COS.sp.607 BUFFER-TIME=12 559) LIFETIME-POS=L [2] P2; WAVECAL=NO; FLASH=NO Comments: This exposure time give a S/N=30 at 1150

28 Move to +21 NONE	COS, ALIGN/OSM	FOCUS=+2160	0 Secs (0 Secs)	
60 relative t o 1222 LP2 focus			[==>]	[2]
Comments: Exposures 3.028 - 3.	.039 are performed as an experiment to avoid into	olerance issues moving back from large focus offsets.		
Error flag for the focus value be e proposal description for more		000.0] is incorrect as the focus offset remains within the absolu	ute focus range and does not pass the upper soft stop of fo	ocus (+2505). Se
29 Move to +19 NONE	COS, ALIGN/OSM	FOCUS=+1960	0 Secs (0 Secs)	
60 relative t o 1222 LP2 focus			[==>]	[2]
		olerance issues moving back from large focus offsets.		
Move to +17 NONE 60 relative t	COS, ALIGN/OSM	FOCUS=+1760	0 Secs (0 Secs)	
o 1222 LP2 focus			[==>]	[2]
Comments: Exposures 3.028 - 3.	.039 are performed as an experiment to avoid into	olerance issues moving back from large focus offsets.		
Move to +15 NONE	COS, ALIGN/OSM	FOCUS=+1560	0 Secs (0 Secs)	
60 relative t o 1222 LP2 focus			[==>]	[2]
Comments: Exposures 3.028 - 3.	.039 are performed as an experiment to avoid into	olerance issues moving back from large focus offsets.		·
Move to +13 NONE	COS, ALIGN/OSM	FOCUS=+1360	0 Secs (0 Secs)	
60 relative t o 1222 LP2 focus			[==>]	[2]
Comments: Exposures 3.028 - 3.	.039 are performed as an experiment to avoid into	olerance issues moving back from large focus offsets.		
33 Move to +11 NONE	COS, ALIGN/OSM	FOCUS=+1160	0 Secs (0 Secs)	
60 relative t o 1222 LP2 focus			[==>]	[2]
Comments: Exposures 3.028 - 3.	.039 are performed as an experiment to avoid into	olerance issues moving back from large focus offsets.		
Move to +96 NONE	COS, ALIGN/OSM	FOCUS=+960	0 Secs (0 Secs)	
0 relative to 1222 LP2 fo cus			[==>]	[2]
Comments: Exposures 3.028 - 3.	.039 are performed as an experiment to avoid into	olerance issues moving back from large focus offsets.		
Move to +76 NONE	COS, ALIGN/OSM	FOCUS=+760	0 Secs (0 Secs)	
0 relative to 1222 LP2 fo cus			[==>]	[2]
Comments: Exposures 3.028 - 3.	.039 are performed as an experiment to avoid into	olerance issues moving back from large focus offsets.		
Move to +56 NONE	COS, ALIGN/OSM	FOCUS=+560	0 Secs (0 Secs)	
0 relative to 1222 LP2 fo cus			[==>]	[2]
Comments: Exposures 3.028 - 3.	.039 are performed as an experiment to avoid into	olerance issues moving back from large focus offsets.		
37 Move to +36 NONE	COS, ALIGN/OSM	FOCUS=+360	0 Secs (0 Secs)	
0 relative to 1222 LP2 fo cus			[==>]	[2]
Comments: Exposures 3.028 - 3.	039 are performed as an experiment to avoid into	olerance issues moving back from large focus offsets.		

Proposal 16491 - G130M 1222 focus 11arcsec LP6 3 (03) - FUV Focus Sweep Exploratory Program for COS at LP6 COS, ALIGN/OSM FOCUS=+160 Move to +16 NONE 0 Secs (0 Secs) 0 relative to I = = > 11222 LP2 fo [2] cus Comments: Exposures 3.028 - 3.039 are performed as an experiment to avoid intolerance issues moving back from large focus offsets. Move to +0 NONE COS, ALIGN/OSM FOCUS=0 0 Secs (0 Secs) relative to 1 f = = > 1222 LP2 foc [2] Comments: Exposures 3.028 - 3.039 are performed as an experiment to avoid intolerance issues moving back from large focus offsets. Reset focus (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G130M FP-POS=3; 0.1 Secs (0.1 Secs) using G130 1300 A BUFFER-TIME=10 I = = > 1M/1300 at L P2 (COS.sp.608 WAVECAL=NO; [2] 219) FLASH=NO: LIFETIME-POS=L Comments: This is an exposure using a different G130M cenwave (1300) at nominal aperture and focus position to attempt to zero out possible focus step intolerance issues. Using a different cenwave resets the OSM f ocus macro for LP2. Change the DARK S/C, DATA, NONE SAA CONTOUR 31; 2 Secs (2 Secs) Focus Step I SPEC COM INSTR [==>] ntolerance to ELSETFOCTOL: 15 [2] OESIPARM POSTO LNOMINAL

Comments: Special commanding exposure to set the focus step intolerance level higher and prevent warning flags from being raised.





Proposal 16491 - G160M 1600 focus 7arcsec LP6 1 (04) - FUV Focus Sweep Exploratory Program for COS at LP6

Thu May 13 13:00:45 GMT 2021

Proposal 16491, G160M_1600_focus_7arcsec_LP6_1 (04), completed

Diagnostic Status: Warning

Scientific Instruments: COS, COS/FUV, COS/NUV

Special Requirements: (none)

Comments: LP2 Focus: +116

LP6_1 Estimated Focus: +650

sit

LP6 focus step relative to LP2 = LP6 focus step + (LP6 estimated absolute focus - LP2 absolute focus)

Focus points set relative to LP2 for LP6_1:

Focus range relative to LP6 zero-point [-1000,+1000] Focus range relative to LP2 zero-point [-466, +1534]

Absolute focus step = LP2 focus + LP6 focus step relative to LP2

Absolute focus range = [-350, +1650]

- Bypass calibration for the COS/FUV exposures.

Disassociate all exposures.

Diagnostics

(G160M_1600_focus_7arcsec_LP6_1 (04)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(G160M_1600_focus_7arcsec_LP6_1 (04)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE NO ORIENT

Г	7	# Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
ي ا	3 ((1) FEIGE-48	RA: 11 47 14.4421 (176.8101754d)	Proper Motion RA: -0.0035937440813851103	V=13.28	Reference Frame: ICRS
و ا	9513		Dec: +61 15 31.68 (61.25880d)	sec of time/yr		
٩	-		Equinox: J2000	Proper Motion Dec: -0.007394999965981697 arcsec/yr		
1	2			Epoch of Position: 2015.5		
	- 1	Category=CALIBRATION	by the targetselector and retrieved from the SIMBA	AD database.		
		Description=[FOCUS TEST] Extended=NO				

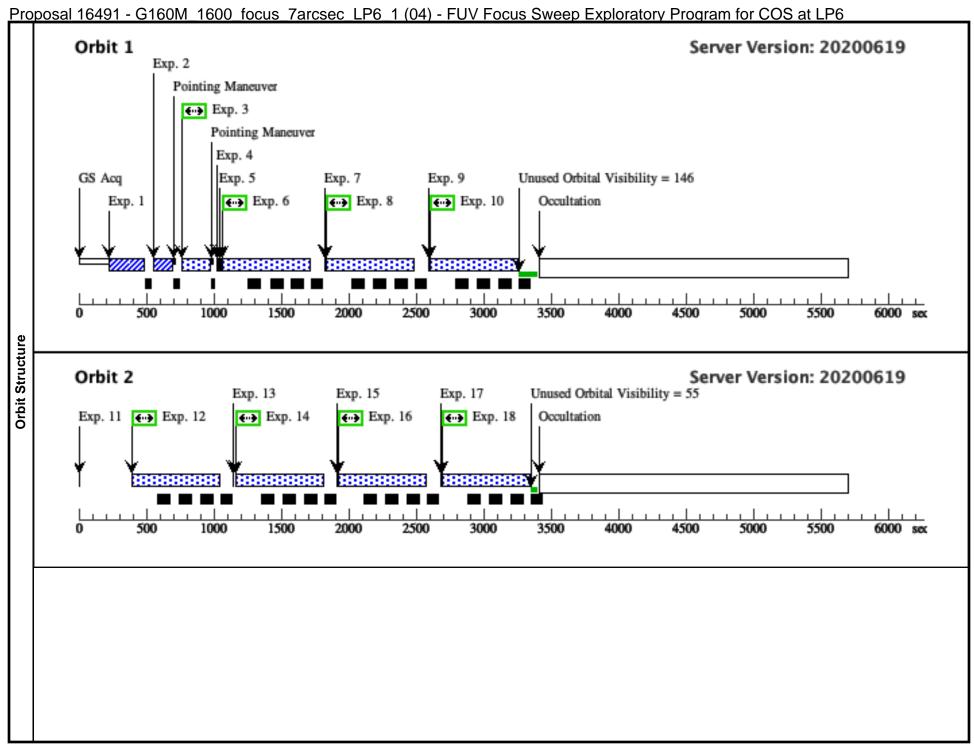
Proposal 16491 - G160M 1600 focus 7arcsec LP6 1 (04) - FUV Focus Sweep Exploratory Program for COS at LP6

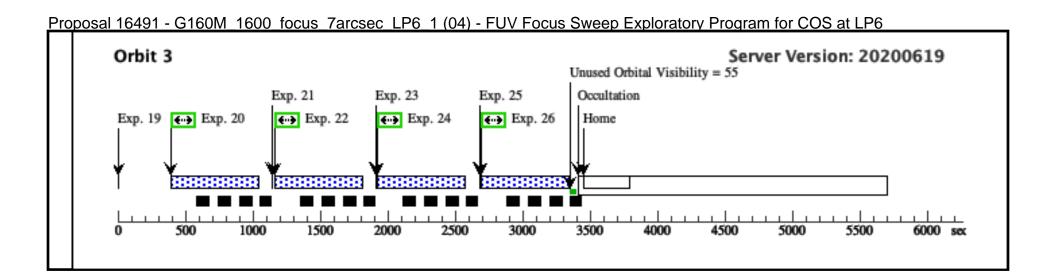
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ/IMAG	(1) FEIGE-48	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				16 Secs (16 Secs)	
	E (COS.ta.607 556)							[==>]	[1]
	omments: S/N=0 posure time and		aken from LENA2 (Program 13635)						
2		(1) FEIGE-48	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				16 Secs (16 Secs)	
	E (COS.ta.607 556)							[==>]	[1]
	omments: S/N=0 posure time and		uken from LENA2 (Program 13635)						
3		(1) FEIGE-48	COS/FUV, TIME-TAG, PSA	G160M	FP-POS=3;			0.1 Secs (0.1 Secs)	
	60M/1600 a LP2 (COS.sp.608			1600 A	BUFFER-TIME=10 00;			[==>]	
	219)				WAVECAL=NO;				[1]
					FLASH=NO;				2-3
					LIFETIME-POS=L P2				
Ca	omments: Initial	izing G160M/1600 a	at nominal aperture and focus position						1
4	Place apertu	NONE	COS, ALIGN/APER		XAPER=-74;			0.0 Secs (0 Secs)	
	re at $+7.0$ ar csec in XD				YAPER=0.0			[==>]	[1]
Ca Th 5	omments: Assun	nes 21 motor steps poves the PSA from +.	er " in XAPER. 3.5" (LP2) to +7.0" (LP6_1).						
5	Move to -10		COS, ALIGN/OSM		FOCUS=-466			0 Secs (0 Secs)	
<u>.</u>	00 (=-466 re lative to 160 0 LP2 focus)						[==>]	[1]
Ca	omments: G160	M/1600 focus at LP2	2: +116						
	v	as at LP6_1: +650							
			: -1000+(650-116) = -466					T	
6	1600_f-1000 (COS.sp.608) (1) FEIGE-48	COS/FUV, TIME-TAG, PSA	G160M	FP-POS=3;	POS TARG 0.0,+	3.5	600 Secs (600 Secs)	
	219)			1600 A	BUFFER-TIME=15 9;			[==>]	
					WAVECAL=NO;				[11]
					FLASH=NO;				[1]
					LIFETIME-POS=L P2				
Co Ex	omments: S/N=3 posure times ta	36 expected at wavel ken from FENA3 an	length 1607 A d LENA2 programs (same configuration	ı).					1
			ght-leak issues above +5.5"/(i.e. WAVEC		NO)				
7	Move to -80		COS, ALIGN/OSM		FOCUS=-266			0 Secs (0 Secs)	
	0 (=-266 rel ative to 160 0 LP2 focus)						[==>]	
									[1]

Proposal 16491 - G160M 1600 focus 7arcsec LP6 1 (04) - FUV Focus Sweep Exploratory Program for COS at LP6 1600 f-800 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G160M FP-POS=3; SAME POS AS 6 600 Secs (600 Secs) (COS.sp.608 1600 A BUFFER-TIME=15 [==>] 219) WAVECAL=NO: [1] FLASH=NO; LIFETIME-POS=L P2 Comments: S/N=36 expected at wavelength 1607 A Exposure times taken from FENA3 and LENA2 programs (same configuration). Move to -60 NONE COS, ALIGN/OSM FOCUS=-66 0 Secs (0 Secs) 0(=-66 relati *[==>1* ve to 1600 L [1] P2 focus) 1600_f-600 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G160M FP-POS=3; SAME POS AS 6 600 Secs (600 Secs) (COS.sp.608 [==>] 1600 A BUFFER-TIME=15 219) WAVECAL=NO; [1] FLASH=NO; LIFETIME-POS=L FOCUS=+134 Move to -40 NONE COS, ALIGN/OSM 0 Secs (0 Secs) 0 = +134 relf = = > 1ative to 160 [2] 0 LP2 focus) 1600 f-400 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G160M FP-POS=3; SAME POS AS 6 600 Secs (600 Secs) (COS.sp.608 1600 A BUFFER-TIME=15 I = = > 1**219**) WAVECAL=NO; [2] FLASH=NO; LIFETIME-POS=L Move to -20 NONE COS. ALIGN/OSM FOCUS=+334 0 Secs (0 Secs) 0 = +334 rel*[==>1* ative to 160 [2] 0 LP2 focus) 1600_f-200 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G160M FP-POS=3; 600 Secs (600 Secs) SAME POS AS 6 (COS.sp.608 1600 A BUFFER-TIME=15 f = = > 1220) WAVECAL=NO; [2] FLASH=NO; LIFETIME-POS=L Comments: S/N=38 at wavelength 1607 A Move to 0 (NONE COS, ALIGN/OSM FOCUS=534 0 Secs (0 Secs) =+534 relati *[==>1* ve to 1600 L P2 focus) [2]

Proposal 16491 - G160M 1600 focus 7arcsec LP6 1 (04) - FUV Focus Sweep Exploratory Program for COS at LP6 1600 f-0 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G160M FP-POS=3; SAME POS AS 6 600 Secs (600 Secs) (COS.sp.608 220) 1600 A BUFFER-TIME=15 [==>] WAVECAL=NO; [2] FLASH=NO; LIFETIME-POS=L Move to +20 NONE COS, ALIGN/OSM FOCUS=+734 0 Secs (0 Secs) 0 (=+734 rel [==>] ative to 160 [2] 0 LP2 focus) 1600_f+200 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G160M FP-POS=3; SAME POS AS 6 600 Secs (600 Secs) (COS.sp.608 1600 A BUFFER-TIME=15 f = = > 1220) WAVECAL=NO; [2] FLASH=NO; LIFETIME-POS=L Move to +40 NONE COS, ALIGN/OSM FOCUS=+934 0 Secs (0 Secs) 0 = +934 rel*[==>]* ative to 160 [3] 0 LP2 focus) 1600_f+400 (1) FEIGE-48 600 Secs (600 Secs) COS/FUV, TIME-TAG, PSA G160M FP-POS=3: SAME POS AS 6 (COS.sp.608 1600 A BUFFER-TIME=15 f = = > 1221) WAVECAL=NO; [3] FLASH=NO; LIFETIME-POS=L P2 Comments: S/N=35 at 1607 A Move to +60 NONE COS, ALIGN/OSM FOCUS=+1134 0 Secs (0 Secs) 0 = +1134 r[==>] elative to 16 [3] 00 LP2 focu 1600_f+600 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G160M FP-POS=3; 600 Secs (600 Secs) SAME POS AS 6 (COS.sp.608 1600 A BUFFER-TIME=15 f = = > 1221) WAVECAL=NO; [3] FLASH=NO; LIFETIME-POS=L Move to +80 NONE COS, ALIGN/OSM FOCUS=+1334 0 Secs (0 Secs) 0 = +1334 rf = = > 1elative to 16 00 LP2 focu [3] Proposal 16491 - G160M 1600 focus 7arcsec LP6 1 (04) - FUV Focus Sweep Exploratory Program for COS at LP6

<u> </u>	341 10+31 0100W	1000 locus raicsec L	.i	1 0 V 1 0003 0W	CCP Exploratory i to	grannior 000 at Li 0	
24	1600_f+800 (1) FEIGE-48	COS/FUV, TIME-TAG, PSA	G160M	FP-POS=3;	SAME POS AS 6	600 Secs (600 Secs)	
	(COS.sp.608 221)		1600 A	BUFFER-TIME=15 9;	5	[==>]	
				WAVECAL=NO;			F2.7
				FLASH=NO;			[3]
				LIFETIME-POS=L P2	,		
25	Move to +10 NONE	COS, ALIGN/OSM		FOCUS=+1534		0 Secs (0 Secs)	
	00 (=+1534 relative to 1 600 LP2 foc us)					[==>]	[3]
26	1600_f+100 (1) FEIGE-48	COS/FUV, TIME-TAG, PSA	G160M	FP-POS=3;	SAME POS AS 6	600 Secs (600 Secs)	
	0 (COS.sp.608 221)		1600 A	BUFFER-TIME=15 9;	5	[==>]	
	,			WAVECAL=NO;			[3]
				FLASH=NO;			[3]
				LIFETIME-POS=L P2	,		





Proposal 16491 - G160M 1600 focus 9arcsec LP6 2 (05) - FUV Focus Sweep Exploratory Program for COS at LP6

Thu May 13 13:00:45 GMT 2021

Proposal 16491, G160M_1600_focus_9arcsec_LP6_2 (05), completed

Diagnostic Status: Warning

Scientific Instruments: COS, COS/FUV, COS/NUV

Special Requirements: (none) Comments: LP2 Focus: +116 LP6_2 Estimated Focus: +1100

LP6 focus step relative to LP2 = LP6 focus step + (LP6 estimated absolute focus - LP2 absolute focus)

Focus points set relative to LP2 for LP6_2:

Focus range relative to LP6 zero-point [-1000,+1000] Focus range relative to LP2 zero-point [-16, +1984]

Absolute focus step = LP2 focus + LP6 focus step relative to LP2

Absolute focus range = [+100, +2100]

Bypass calibration for the COS/FUV exposures.

Disassociate all exposures.

Diagnostics (G160M_1600_focus_9arcsec_LP6_2 (05)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(G160M_1600_focus_9arcsec_LP6_2 (05)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE NO ORIENT

	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
က္က	(1)	FEIGE-48	RA: 11 47 14.4421 (176.8101754d)	Proper Motion RA: -0.0035937440813851103	V=13.28	Reference Frame: ICRS
ge			Dec: +61 15 31.68 (61.25880d)	sec of time/yr		
Tarç			Equinox: J2000	Proper Motion Dec: -0.007394999965981697 arcsec/yr		
<u>۾</u> ا				Epoch of Position: 2015.5		
۱ž		nents: This object was genero gory=CALIBRATION	ated by the targetselector and retrieved from the SIM	IBAD database.		
	Desci	ription=[FOCUS TEST] ded=NO				

Proposal 16491 - G160M 1600 focus 9arcsec LP6 2 (05) - FUV Focus Sweep Exploratory Program for COS at LP6

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ/IMAC	G (1) FEIGE-48	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				16 Secs (16 Secs)	
	E (COS.ta.607 556)	,						[==>]	[1]
	mments: S/N=0 posure time and		aken from LENA2 (Program 13635)						
2		G (1) FEIGE-48	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				16 Secs (16 Secs)	
	E (COS.ta.607 556)	1						[==>]	[1]
	mments: S/N=0 posure time and		aken from LENA2 (Program 13635)						
3		(1) FEIGE-48	COS/FUV, TIME-TAG, PSA	G160M	FP-POS=3;			0.1 Secs (0.1 Secs)	
	60M/1600 a LP2 (COS.sp.608			1600 A	BUFFER-TIME=10 00;			[==>]	
	219)				WAVECAL=NO;				[1]
					FLASH=NO;				[1]
					LIFETIME-POS=L P2				
Ca	mments: Initia	lizing G160M/1600	at nominal aperture and focus position						· ·
4	Place apertu	NONE	COS, ALIGN/APER		XAPER=-116;			0.0 Secs (0 Secs)	
	re at +9.0 ar csec in XD				YAPER=0.0			[==>]	[1]
Ca Th	mments: Assun is command mo	nes 21 motor steps p oves the PSA from +	oer " in XAPER. 3.5" (LP2) to +9.0" (LP6_1).						
5	Move to -10		COS, ALIGN/OSM		FOCUS=-16			0 Secs (0 Secs)	
	00 (=-16 rel ative to 160 0 LP2 focus							[==>]	[1]
Ca	mments: G160	M/1600 focus at LP2	2: +116						
G_{I}	60M/1600 foci	us at LP6_2: +1100							
			= -1000+(1100-116) = -16						
6	1600_f-1000 (COS.sp.608	0 (1) FEIGE-48	COS/FUV, TIME-TAG, PSA	G160M	FP-POS=3;	POS TARG 0.0,+5	5.5	600 Secs (600 Secs)	
	219)			1600 A	BUFFER-TIME=15 9;			I = => J	
					WAVECAL=NO;				F17
					FLASH=NO;				[1]
					LIFETIME-POS=L P2				
Ca Ex	mments: S/N=3	36 expected at wave ken from FENA3 an	length 1607 A ad LENA2 programs (same configuration	ı).	1 2				-
			ght-leak issues above +5.5"/(i.e. WAVEC		NO)				
7	Move to -80		COS, ALIGN/OSM		FOCUS=184			0 Secs (0 Secs)	
	0 (=+184 reative to 160 0 LP2 focus							[==>]	
									[1]

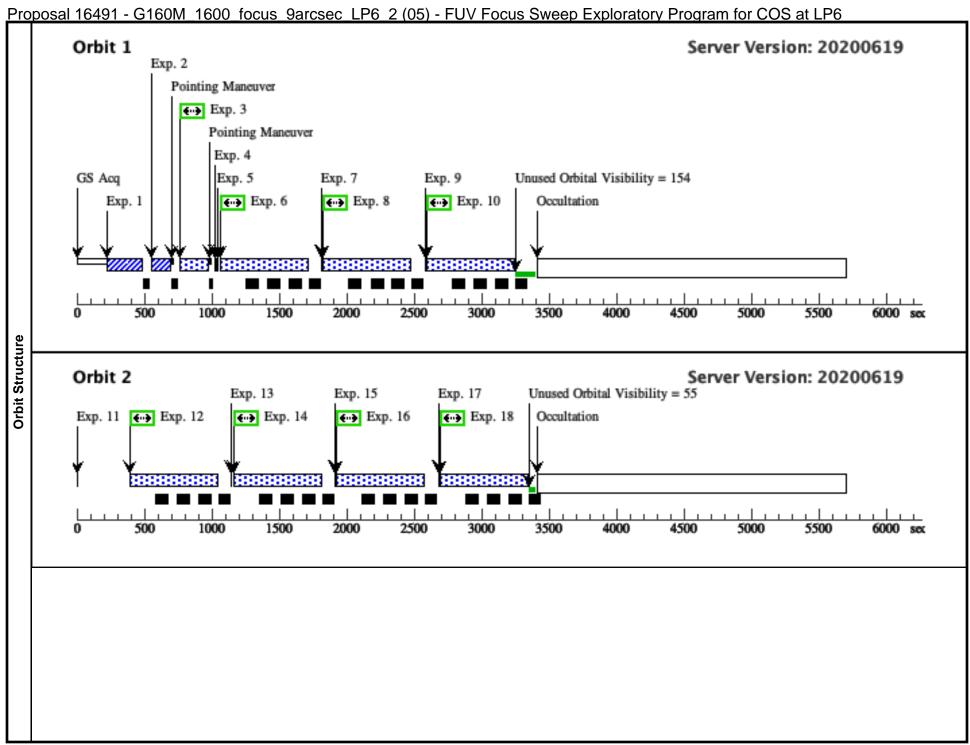
Proposal 16491 - G160M 1600 focus 9arcsec LP6 2 (05) - FUV Focus Sweep Exploratory Program for COS at LP6 1600 f-800 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G160M FP-POS=3; SAME POS AS 6 600 Secs (600 Secs) (COS.sp.608 1600 A BUFFER-TIME=15 [==>] 219) WAVECAL=NO: [1] FLASH=NO; LIFETIME-POS=L P2 Comments: S/N=36 expected at wavelength 1607 A Exposure times taken from FENA3 and LENA2 programs (same configuration). Move to -60 NONE COS, ALIGN/OSM FOCUS=+384 0 Secs (0 Secs) 0(=+384 rel)*[==>1* ative to 160 [1] 0 LP2 focus) 1600_f-600 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G160M FP-POS=3; SAME POS AS 6 600 Secs (600 Secs) (COS.sp.608 [==>] 1600 A BUFFER-TIME=15 219) WAVECAL=NO; [1] FLASH=NO; LIFETIME-POS=L FOCUS=+584 Move to -40 NONE COS, ALIGN/OSM 0 Secs (0 Secs) 0 = +584 relf = = > 1ative to 160 [2] 0 LP2 focus) 1600 f-400 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G160M FP-POS=3; SAME POS AS 6 600 Secs (600 Secs) (COS.sp.608 1600 A BUFFER-TIME=15 I = = > 1**219**) WAVECAL=NO; [2] FLASH=NO; LIFETIME-POS=L Move to -20 NONE COS. ALIGN/OSM FOCUS=+784 0 Secs (0 Secs) 0 = +784 rel*[==>1* ative to 160 [2] 0 LP2 focus) 1600_f-200 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G160M FP-POS=3; 600 Secs (600 Secs) SAME POS AS 6 (COS.sp.608 1600 A BUFFER-TIME=15 f = = > 1220) WAVECAL=NO; [2] FLASH=NO; LIFETIME-POS=L Comments: S/N=38 at wavelength 1607 A Move to 0 (NONE COS, ALIGN/OSM FOCUS=+984 0 Secs (0 Secs) =+984 relati *[==>1* ve to 1600 L P2 focus) [2]

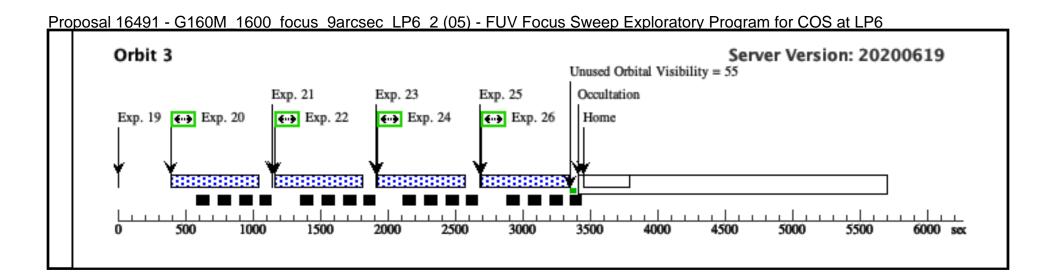
Proposal 16491 - G160M 1600 focus 9arcsec LP6 2 (05) - FUV Focus Sweep Exploratory Program for COS at LP6 16 1600_f-0 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA FP-POS=3; SAME POS AS 6 600 Secs (600 Secs) G160M

17 Move to +20 NONE COS, ALIGN/OSM 0 (=+1184 r elative to 16 00 LP2 focu s)	1600 A	BUFFER-TIME=15 9; WAVECAL=NO; FLASH=NO; LIFETIME-POS=L P2 FOCUS=+1184	[==>]	[2]
0 (=+1184 r elative to 16 00 LP2 focu s)		FLASH=NO; LIFETIME-POS=L P2		[2]
0 (=+1184 r elative to 16 00 LP2 focu s)		LIFETIME-POS=L P2		
0 (=+1184 r elative to 16 00 LP2 focu s)		P2		
0 (=+1184 r elative to 16 00 LP2 focu s)		FOCUS=+1184		
elative to 16 00 LP2 focu s)			0 Secs (0 Secs)	
· · · · · · · · · · · · · · · · · · ·			[==>]	[2]
18 1600_f+200 (1) FEIGE-48 COS/FUV, TIME-TA	AG, PSA G160M	FP-POS=3; SAME POS AS 6	600 Secs (600 Secs)	
(COS.sp.608 220)	1600 A	BUFFER-TIME=15 9;	[==>]	
		WAVECAL=NO;		r21
		FLASH=NO;		[2]
		LIFETIME-POS=L P2		
19 Move to +40 NONE COS, ALIGN/OSM		FOCUS=+1384	0 Secs (0 Secs)	
0 (=+1384 r elative to 16 00 LP2 focu s)			[==>]	[3]
20 1600 f+400 (1) FEIGE-48 COS/FUV, TIME-TA	AG, PSA G160M	FP-POS=3; SAME POS AS 6	600 Secs (600 Secs)	
(COS.sp.608 221)	1600 A	BUFFER-TIME=15 9;	[==>]	
		FLASH=NO;		[3]
		WAVECAL=NO;		[3]
		LIFETIME-POS=L P2		
Comments: S/N=35 at 1607 A		12		
21 Move to +60 NONE COS, ALIGN/OSM		FOCUS=+1584	0 Secs (0 Secs)	
0 (=+1584 r elative to 16 00 LP2 focu s)			[==>]	[3]
22 1600 f+600 (1) FEIGE-48 COS/FUV, TIME-TA	AG, PSA G160M	FP-POS=3; SAME POS AS 6	600 Secs (600 Secs)	
(COS.sp.608 221)	1600 A	BUFFER-TIME=15	[==>]	
		9; WAVECAL=NO;		
		WAVECAL-NO, FLASH=NO;		[3]
		LIFETIME-POS=L		
		P2		
23 Move to +80 NONE COS, ALIGN/OSM 0 (=+1784 r		FOCUS=+1784	0 Secs (0 Secs)	
elative to 16 00 LP2 focu			[==>]	
s)				
				[3]

Proposal 16491 - G160M 1600 focus 9arcsec LP6 2 (05) - FUV Focus Sweep Exploratory Program for COS at LP6

opo	Journal Chook	1000 10003 Jaio300 L	1 0 2 (00)	1 0 V 1 0003 0W	CCP Exploratory i io	gram for 000 at Er 0	
24	1600_f+800 (1) FEIGE-48 (COS.sp.608 221)	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=3; BUFFER-TIME=15 9; WAVECAL=NO; FLASH=NO; LIFETIME-POS=L P2	SAME POS AS 6	600 Secs (600 Secs) [==>]	[3]
25	Move to +10 NONE 00 (=+1984 relative to 1 600 LP2 foc us)	COS, ALIGN/OSM		FOCUS=+1984		0 Secs (0 Secs) [==>]	[3]
26	1600_f+100 (1) FEIGE-48 0 (COS.sp.608 221)	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=3; BUFFER-TIME=15 9; WAVECAL=NO; FLASH=NO; LIFETIME-POS=L P2		600 Secs (600 Secs) [==>]	[3]





Proposal 16491 - G160M 1600 focus 11arcsec LP6 3 (06) - FUV Focus Sweep Exploratory Program for COS at LP6

Thu May 13 13:00:45 GMT 2021

Proposal 16491, G160M_1600_focus_11arcsec_LP6_3 (06), implementation

Diagnostic Status: Warning

Scientific Instruments: S/C, COS, COS/FUV, COS/NUV

Special Requirements: (none)

Comments: LP2 Focus: +116

LP6_1 Estimated Focus: +1600

LP6 focus step relative to LP2 = LP6 focus step + (LP6 estimated absolute focus - LP2 absolute focus)

Focus points set relative to LP2 for LP6_3:

Focus range relative to LP6 zero-point [-1000, +800] Focus range relative to LP2 zero-point [+484, +2284]

Absolute focus step = LP2 focus + LP6 focus step relative to LP2

Absolute focus range = [+600, +2400]

Focus range relative to LP6 reduced from +1000 to +800 to prevent passing upper soft stop of focus (+2505)

- Bypass calibration for the COS/FUV exposures.
- Disassociate all exposures.

Visit 6 is OH HOLD until the data from visits 4 and 5 is analysed.

Diagnostics

(G160M_1600_focus_11arcsec_LP6_3 (06)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(G160M_1600_focus_11arcsec_LP6_3 (06)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE NO ORIENT

I		# Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
ı	છ	(1) FEIGE-48	RA: 11 47 14.4421 (176.8101754d)	Proper Motion RA: -0.0035937440813851103	V=13.28	Reference Frame: ICRS
ı	<u>je</u>		Dec: +61 15 31.68 (61.25880d)	sec of time/yr		
ı	ī		Equinox: J2000	Proper Motion Dec: -0.007394999965981697		
ı	–		Equiliox. 32000	arcsec/yr		
ı	ğ			Epoch of Position: 2015.5		
ı	×	Comments: This object was gener	ated by the targetselector and retrieved from the SII	MBAD database.		
ı		Category=CALIBRATION				
ı		Description=[FOCUS TEST]				
•		Extended=NO				

Proposal 16491 - G160M 1600 focus 11arcsec LP6 3 (06) - FUV Focus Sweep Exploratory Program for COS at LP6

# Label Target (ETC Run)	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit				
1 ACQ/IMAG (1) FEIGE-48	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				16 Secs (16 Secs)					
E (COS.ta.607 556)						[==>]	[1]				
Comments: S/N=60 Exposure time and ETC calculation to	iken from LENA2 (Program 13635)						•				
2 ACQ/IMAG (1) FEIGE-48	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				16 Secs (16 Secs)					
E (COS.ta.607 556)						[==>]	[1]				
omments: S/N=60 sposure time and ETC calculation taken from LENA2 (Program 13635)											
3 Initialize G1 (1) FEIGE-48	COS/FUV, TIME-TAG, PSA	G160M	FP-POS=3;			0.1 Secs (0.1 Secs)					
60M/1600 at LP2		1600 A	BUFFER-TIME=10 00;			[==>]					
(COS.sp.608 219)			WAVECAL=NO;								
			FLASH=NO;				[1]				
			LIFETIME-POS=L P2								
Comments: Initializing G160M/1600	at nominal aperture and focus position										
4 Change the DARK Focus Step I	S/C, DATA, NONE			SAA CONTOUR	31;	2 Secs (2 Secs)					
ntolerance to				SPEC COM INST ELSETFOCTOL;	R [==>	[==>]					
30				QESIPARM POST L 30	ГО		[1]				
	sure to set the focus step intolerance lev	vel higher and preve		ring raised.							
Place apertu NONE re at +11.0 a	COS, ALIGN/APER		XAPER=-158;			0.0 Secs (0 Secs)					
rcsec in XD			YAPER=0.0			[==>]	[1]				
Comments: Assumes 21 motor steps per " in XAPER. This command moves the PSA from +3.5" (LP2) to +11.0" (LP6_3).											
6 Move to -24 NONE 00 (=-916 re	COS, ALIGN/OSM		FOCUS=-916			0 Secs (0 Secs)					
lative to 160 0 LP2 focus)						[==>]	[1]				
Comments: G160M/1600 focus at LP2	2: +116										
G160M/1600 focus at LP6_2: +1600											
-2400 focus at LP6 using LP5 focus =	-2400+(1600-116) = -916										
7 1600_f-2400 (1) FEIGE-48 (COS.sp.608	COS/FUV, TIME-TAG, PSA	G160M	FP-POS=3;	POS TARG 0.0,+7	7.5	600 Secs (600 Secs)					
(CO3.sp.008 219)		1600 A	BUFFER-TIME=15 9;			[==>]					
			WAVECAL=NO;								
			FLASH=NO;				[1]				
			LIFETIME-POS=L P2								
Comments: S/N=36 expected at wavel Exposure times taken from FENA3 an	length 1607 A d LENA2 programs (same configuration	ı).	± 2			1					
	ght-leak issues above +5.5"/(i.e. WAVEC		NO)								
Wayacale are turned off to mitigate lie											

Proposal 16491 - G160M 1600 focus 11arcsec LP6 3 (06) - FUV Focus Sweep Exploratory Program for COS at LP6 COS, ALIGN/OSM Move to -20 NONE FOCUS=-516 0 Secs (0 Secs) 00 = -516 reI = = > 1lative to 160 [1] 0 LP2 focus) 1600 f-2000 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G160M FP-POS=3; SAME POS AS 7 600 Secs (600 Secs) (COS.sp.608 f = = > 11600 A BUFFER-TIME=15 219) WAVECAL=NO; [1] FLASH=NO; LIFETIME-POS=L Comments: S/N=36 expected at wavelength 1607 A Exposure times taken from FENA3 and LENA2 programs (same configuration). 10 Move to -16 NONE COS, ALIGN/OSM FOCUS=-116 0 Secs (0 Secs) 00(=-116 rel)f = = > 1ative to 160 [1] 0 LP2 focus) 1600 f-1600 (1) FEIGE-48 FP-POS=3; 600 Secs (600 Secs) COS/FUV, TIME-TAG, PSA G160M SAME POS AS 7 (COS.sp.608 BUFFER-TIME=15 1600 A I = = > 1219) WAVECAL=NO; [1] FLASH=NO; LIFETIME-POS=L Move to -14 NONE COS, ALIGN/OSM FOCUS=+84 0 Secs (0 Secs) 00 (=+84 rel)I = = > 1ative to 160 [2] 0 LP2 focus) 13 1600_f-1400 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G160M FP-POS=3; SAME POS AS 7 600 Secs (600 Secs) (COS.sp.608 [==>] 1600 A BUFFER-TIME=15 219) WAVECAL=NO; [2] FLASH=NO; LIFETIME-POS=L Move to -12 NONE COS, ALIGN/OSM FOCUS=+284 0 Secs (0 Secs) 00 (=+284 r)[==>] elative to 16 [2] 00 LP2 focu 1600_f-1200 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G160M FP-POS=3; SAME POS AS 7 600 Secs (600 Secs) (COS.sp.608 1600 A BUFFER-TIME=15 [==>] ²²⁰) WAVECAL=NO; [2] FLASH=NO; LIFETIME-POS=L P2 Comments: S/N=38 at wavelength 1607 A 16 Move to -10 NONE COS, ALIGN/OSM FOCUS=+484 0 Secs (0 Secs) 00 (= +484 r)[==>1 elative to 16 00 LP2 focu [2] s)

Proposal 16491 - G160M 1600 focus 11arcsec LP6 3 (06) - FUV Focus Sweep Exploratory Program for COS at LP6 1600 f-1000 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G160M FP-POS=3; SAME POS AS 7 600 Secs (600 Secs) (COS.sp.608 220) 1600 A BUFFER-TIME=15 [==>] WAVECAL=NO; [2] FLASH=NO; LIFETIME-POS=L Move to -80 NONE COS, ALIGN/OSM FOCUS=+684 0 Secs (0 Secs) 0 = +684 rel[==>] ative to 160 [2] 0 LP2 focus) 1600_f-800 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G160M FP-POS=3; 600 Secs (600 Secs) SAME POS AS 7 (COS.sp.608 1600 A BUFFER-TIME=15 f = = > 1220) WAVECAL=NO; [2] FLASH=NO; LIFETIME-POS=L Move to -40 NONE COS, ALIGN/OSM FOCUS=+1084 0 Secs (0 Secs) 0 = +1084 r*[==>]* elative to 16 [3] 00 LP2 focu 1600 f-400 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G160M FP-POS=3; SAME POS AS 7 600 Secs (600 Secs) (COS.sp.608 1600 A BUFFER-TIME=15 f = = > 1221) WAVECAL=NO; [3] FLASH=NO; LIFETIME-POS=L Comments: S/N=35 at 1607 A Move to +0 NONE 0 Secs (0 Secs) COS. ALIGN/OSM FOCUS=+1484 (=+1484 rel)[==>]ative to 160 [3] 0 LP2 focus) 1600_f+0 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G160M FP-POS=3; 600 Secs (600 Secs) SAME POS AS 7 (COS.sp.608 1600 A BUFFER-TIME=15 f = = > 1221) WAVECAL=NO; [3] FLASH=NO; LIFETIME-POS=L Move to +40 NONE COS, ALIGN/OSM FOCUS=+1884 0 Secs (0 Secs) 0 = +1884 r*[==>1* elative to 16 00 LP2 focu [3] Proposal 16491 - G160M 1600 focus 11arcsec LP6 3 (06) - FUV Focus Sweep Exploratory Program for COS at LP6 1600 f+400 (1) FEIGE-48 COS/FUV, TIME-TAG, PSA G160M FP-POS=3; SAME POS AS 7 600 Secs (600 Secs) (COS.sp.608 1600 A BUFFER-TIME=15 I = = > 1221) WAVECAL=NO: [3] FLASH=NO; LIFETIME-POS=L Comments: No focus at +1000 is performed as it would set the absolute focus to +2600, outside of the upper soft stop limit of +2505. Move to +10 NONE COS, ALIGN/OSM FOCUS=+1000 0 Secs (0 Secs) 00 relative t *[==>1* o 1600 LP2 [3] focus Comments: Exposures 6.026 - 6.027 are performed as an experiment to avoid intolerance issues moving back from large focus offsets. Move to +10 NONE COS, ALIGN/OSM FOCUS=+100 0 Secs (0 Secs) 0 relative to *[==>1* 1600 LP2 fo [3] cus Comments: This move is performed to avoid intolerance issues moving back from large focus offsets. Reset focus (1) FEIGE-48 COS/FUV, TIME-TAG, PSA FP-POS=3; 0.1 Secs (0.1 Secs) G160M using G160 1589 A BUFFER-TIME=10 f = = > 1M/1589 at L 00; (COS.sp.608 WAVECAL=NO; [3] 219) FLASH=NO; LIFETIME-POS=L Comments: This is an exposure using a different G160M cenwave (1589) at nominal aperture and focus position to attempt to zero out possible focus step intolerance issues. Using a different cenwave resets the OSM f ocus macro for LP2. Change the DARK S/C, DATA, NONE SAA CONTOUR 31; 2 Secs (2 Secs) Focus Step I SPEC COM INSTR [==>] ntolerance to ELSETFOCTOL; 15 [3] **OESIPARM POSTO** L NOMINAL Comments: Special commanding exposure to set the focus step intolerance level higher and prevent warning flags from being raised.

