

14525 - Characterization of COS/FUV detector modal gain at Lifetime Position 4

Cycle: 23, Proposal Category: CAL/COS (Availability Mode: RESTRICTED)

INVESTIGATORS

Name	Institution	E-Mail
Dr. David J. Sahnow (PI) (Contact)	Space Telescope Science Institute	sahnow@stsci.edu
Mees Fix (CoI)	Space Telescope Science Institute	fix@stsci.edu

VISITS

Visit	Targets used in Visit	Configurations used in Visit	Orbits Used	Last Orbit Planner Run	OP Current with Visit?
13	DARK DEUTERIUM NONE	COS COS/FUV S/C	1	29-Jul-2016 13:44:18.0	yes
16	DARK DEUTERIUM NONE	COS COS/FUV S/C	1	29-Jul-2016 13:44:20.0	yes
23	DARK DEUTERIUM NONE	COS COS/FUV S/C	1	29-Jul-2016 13:44:21.0	yes
26	DARK DEUTERIUM NONE	COS COS/FUV S/C	1	29-Jul-2016 13:44:22.0	yes
33	DARK DEUTERIUM NONE	COS COS/FUV S/C	1	29-Jul-2016 13:44:23.0	yes

Prope	<u>sai 14525 (STSCI Edil Number 3, C</u>	<u>-realed: Friday, July 29, 2016 12:44</u>	23 PIVI ES		
Visit	Targets used in Visit	Configurations used in Visit	Orbits Used		OP Current with Visit?
36	DARK	COS	1	29-Jul-2016 13:44:24.0	yes
	DEUTERIUM	COS/FUV			
	NONE	S/C			

Proposal 14525 (STScI Edit Number: 3, Created: Friday, July 29, 2016 12:44:25 PM EST) - Overview

6 Total Orbits Used

ABSTRACT

This program will characterize the COS/FUV modal gain at the detector locations over a range of possible initial HV settings for LP4 operations. The deuterium lamp will be used to illuminate the detector region covering possible LP4 positions (between LP3 and the bottom of the detector), along with the LP2 position (where the LP4 wavecal spectrum will fall). The data obtained will be used to create gain maps of the detector.

OBSERVING DESCRIPTION

This program will obtain spectra from the deuterium lamp with enough counts to permit the construction of a gain map covering the region from LP3 down to the bottom of the detector. It will also make similar exposures covering the LP2 location, where the LP4 wavecal spectra will fall.

This will be done at three high voltage settings in order to bracket the likely initial LP4 HV values (163, 167, and 171 for FUVA; 159, 163, and 167 for FUVB). In order to most efficiently illuminate the two segments, the G130M/1309 setting will be used for Segment A, and G160M/1600 will be used for Segment B. Both segments can safely remain on with either setting.

The program consists of six visits, with each collecting data at all three aperture positions for a single cenwave and set of HVs. The procedure for collecting this data is:

* Set HV levels on both segments

* Adjust the aperture in the cross dispersion direction so that the deuterium lamp will illuminate the LP2 region (on Segment A if using G130M/1309, or Segment B if using G160M/1600).

- * Take a 400 second deuterium lamp exposure using both detector segments.
- * Adjust the aperture in the cross dispersion direction so that the deuterium lamp will illuminate the LP3 region.
- * Take a 400 second deuterium lamp exposure using both detector segments.
- * Adjust the aperture in the cross dispersion direction so that the deuterium lamp will illuminate the LP4 region.
- * Take a 400 second deuterium lamp exposure using both detector segments.

Proposal 14525 (STScI Edit Number: 3, Created: Friday, July 29, 2016 12:44:25 PM EST) - Overview * Return the HV to its nominal values.

Repeat for each cenwave and HV setting.

The first character of the visit number is 1, 2, or 3, for depending on the HV values: 1 for HVA/B = 163/159, 2 for 167/163, and 3 for 171/167. The second character of the visit number is 3 for G130M/1309, or 6 for G160M/1600.

No up-to-date gainmaps exist (showing current usage) for the region below LP3 at the specified high-voltage levels. It is important to know the current gain situation over this detector region in order to optimize the placement of LP4. These maps will allow the spectra to be placed as close as possible to LP3, thus preserving resolution and extending operational lifetime, while retaining data quality.

Proposal 14525 - G130M/1309 for HV 163/159 (13) - Characterization of COS/FUV detector modal gain at Lifetime Position 4

Γ		Proposal 14525, G130M/1309 for HV 163/159 (13), implementation Fri Jul 29 17:44:25 GMT 2010	6
<u>.</u>	¥	Diagnostic Status: Warning	
	/IS	Scientific Instruments: S/C, COS, COS/FUV	
[-	Special Requirements: BEFORE 17-JUL-2016:00:00; PARALLEL	
		Comments: This visit collects deuterium lamp data using G130M/1309 at 3 aperture positions using HV values of 163/159.	
	cs	(G130M/1309 for HV 163/159 (13)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU	Τ
	Sti	(Move aperture to LP2 location for Segment A (13.002)) Warning (Form): This ALIGN/APER exposure should be preceded by a science exposure to define the starting position for the scan.	
	no n		
Ι.	lag		
Ĺ	ā		
			_

Proposal 14525 - G130M/1309 for HV 163/159 (13) - Characterization of COS/FUV detector modal gain at Lifetime Position 4

	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Adjust HV t	DARK	S/C, DATA, NONE			SAA CONTOUR 31;		295 Secs (295 Secs)	
		o 163/159					SPEC COM INSTR ELHLTHVF;		[==>]	
							QASISTATES COS			
							FUV HVLOW HVN OM:			
							QESIPARM ENDC TSA 163;			[1]
							QESIPARM ENDC TSB 159;			
							OESIPARM SEGM			
							ENT AB			
	Com		the HV to 163/159						Т	
	2	Move apertu re to LP2 loc	NONE	COS, ALIGN/APER		XAPER=-413			0.0 Secs (0 Secs)	
		ation for Seg ment A							[==>]	[1]
	Com		aperture in the apr	propriate position to illuminate the LP2	region of the detect	tor when illuminating Se	oment A with G130M/1	309		
					region of the detect	or when thunnhalling be	5meni 11 wiin 0150m/1.			
			ue at LP3 is 182.1 value for FCA to ill	luminate Segment A with G130M/1309	at LP2 Position is -2	231				
	Ther	efore XAPER	is set to -231 - 182.	l = -413						
	3		DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M	CURRENT=MEDIU	l		400 Secs (400 Secs)	
es		9 Deuterium Exposure at			1309 A	М;			[==>]	
sur		LP2				BUFFER-TIME=11 1:				[1]
őc						FP-POS=1				
Exposures	Com	ments: Deuter	ium exposure optim	ized for Segment A. FP-POS=1 was c	hosen because previ		nat it has slightly more of	counts than the other l	FP-POS values for G130M/1309.	
	4	Move apertu		COS, ALIGN/APER	•	XAPER=-260	QESIPARM XSTEP		0.0 Secs (0 Secs)	
		re to LP3 loc ation for Seg ment A					S 153		[==>]	[1]
	Com	ments: Put the	aperture in the app	propriate position to illuminate the LP.	3 region of the detect	tor when illuminating Se	gment A with G130M/1.	309.		
			ue at LP3 is 182.1	luminate Segment A with G130M/1309	at I P3 Position is -	78				
			0	C C					• • • • • • •	. 1
	catio		15 set to -78 - 182.1	= -200. *HOWEVER*, because of the	TRANS rules, the Q	JESIPARM XSTEPS 153	5 [(-200415) = 155]	Special Requirement	is necessary to move the aperture to the	e correct lo
	5	G130M/130 9 Deuterium	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M	CURRENT=MEDIU	1		400 Secs (400 Secs)	
		Exposure at			1309 A	M; BUFFER-TIME=11			[==>]	
		LP3				1;				[1]
						FP-POS=1				
	Com	ments: Deuter	ium exposure optim	ized for Segment A. FP-POS=1 was c	hosen because previ	ous observations show th	nat it has slightly more o	counts than the other h	FP-POS values for G130M/1309.	
						5				

Proposal 14525 - G130M/1309 for HV 163/159 (13) - Characterization of COS/FUV detector modal gain at Lifetime Position 4 0.0 Secs (0 Secs) Move apertu NONE COS, ALIGN/APER XAPER=-206 QESIPARM XSTEP re to LP4 loc S 54 [==>]ation for Seg [1] ment A Comments: Put the aperture in the appropriate position to illuminate the LP4 region of the detector when illuminating Segment A with G130M/1309. PSA LAPXSTP value at LP3 is 182.1 Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at LP4 Position is -24 Therefore, XAPER is set to -24 - 182.1 = -206. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS 54" [(-206 - -260) = 54] Special Requirement is necessary to move the aperture to the correct loca tion. 7 G130M/130 DEUTERIUM COS/FUV, TIME-TAG, FCA G130M CURRENT=MEDIU 400 Secs (400 Secs) 9 Deuterium M: 1309 A [==>] Exposure at BUFFER-TIME=11 LP3 [1] 1; FP-POS=1 Comments: Deuterium exposure optimized for Segment A. FP-POS=1 was chosen because previous observations show that it has slightly more counts than the other FP-POS values for G130M/1309. Return to no DARK S/C, DATA, NONE SPEC COM INSTR 50 Secs (50 Secs) 8 minal HV fo ELHVADJPROP; [==>]r standard m **OESIPARM ENDC** odes TSA 167; [1] QESIPARM ENDC **TSB** 169 Comments: Set HV to nominal values used for the standard modes (167/169). HV increase is (167-163) = 4 for Segment A, and (169-159) = 10 for Segment B. Therefore, exposure time is 39 seconds + ceiling(10*1.1) = 50 seconds Server Version: 20160601 Orbit 1 Unused Orbital Visibility = 3210 Exp. 2 Exp. 6 Exp. 8 Exp. 4 **Orbit Structure** Home Occultation Exp. 1 Exp. 3 Exp. 5 Exp. 7 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 n 5500 sec

Proposal 14525 - G160M/1600 for HV 163/159 (16) - Characterization of COS/FUV detector modal gain at Lifetime Position 4

		Proposal 14525, G160M/1600 for HV 163/159 (16), implementation Fri Jul 29 17:44:25 GMT 2016	5
.±	2	Diagnostic Status: Warning	L
5	2	Scientific Instruments: S/C, COS, COS/FUV	L
[-	Special Requirements: BEFORE 17-JUL-2016:00:00:00; PARALLEL	
		Comments: This visit collects deuterium lamp data using G160M/1600 at 3 aperture positions using HV values of 163/159.	
	cs	(G160M/1600 for HV 163/159 (16)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU	
1		(Move aperture to LP2 location for Segment B (16.002)) Warning (Form): This ALIGN/APER exposure should be preceded by a science exposure to define the starting position for the scan.	L
	2		L
	ag		L
Ë	5		
			-

Proposal 14525 - G160M/1600 for HV 163/159 (16) - Characterization of COS/FUV detector modal gain at Lifetime Position 4

	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Adjust HV t	DARK	S/C, DATA, NONE			SAA CONTOUR 31	;	295 Secs (295 Secs)	
		o 163/159					SPEC COM INSTR ELHLTHVF;		[==>]	
							QASISTATES COS			
							FUV HVLOW HVN OM;			
							QESIPARM ENDC TSA 163;			[1]
							QESIPARM ENDC TSB 159;			
							QESIPARM SEGM			
							ÈNT AB			
	Com		the HV to 163/1							1
	2	Move apertu re to LP2 loc		COS, ALIGN/APER		XAPER=-425			0.0 Secs (0 Secs)	
		ation for Seg							[==>]	[1]
	Com	ment B	anartura in tha	appropriate position to illuminate the LP.	ragion of the deter	tor when illuminating Se	amont b with C160M/1	600		
			•		e region of the detect	or when tituminating se	gmeni b wiin G100M/10	000.		
			ue at LP3 is 182 value for FCA i	2.1 to illuminate Segment B with G160M/1600	at LP2 Position is -	243				
			v	0						
	3		is set to -243 - DEUTERIUM		G160M	CURRENT=MEDIU	I		400 Secs (400 Secs)	
S	5	0 Deuterium	DECTERIOR		1600 A	M;	,		[==>]	
'n		Exposure at LP2				BUFFER-TIME=11			L - J	[1]
Exposures						1; FP-POS=4				[1]
X	Com	ments: Deuter	ium exposure o	ptimized for Segment B. FP-POS=4 was c	hosen hecause previ		hat it has slightly more	counts than the other	FP-POS values for G160M/1600	
	4	Move apertu		COS, ALIGN/APER	nosen eccanse pren	XAPER=-267	QESIPARM XSTEP		0.0 Secs (0 Secs)	
		re to LP3 loc ation for Seg ment B					Š 158		[==>]	[1]
	Com	ments: Put the	e aperture in the	appropriate position to illuminate the LP.	3 region of the detect	tor when illuminating Se	gment B with G160M/1	600.		
			ue at LP3 is 182 value for FCA	2.1 to illuminate Segment B with G160M/1600	at IP3 Position is -	85				
			v	82.1 = -267. *HOWEVER*, because of the			8" [(-267425) = 158]] Special Requirement	t is necessary to move the aperture to the	e correct lo
	catic 5		DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M	CURRENT=MEDIU	J		400 Secs (400 Secs)	
	-	0 Deuterium			1600 A	М;			[==>]	
		Exposure at LP3				BUFFER-TIME=11				[1]
						1; FP-POS=4				[-]
	Com	ments: Deuter	ium exposure o	ptimized for Segment B. FP-POS=4 was c	hosen hecause previ		hat it has slightly more	counts than the other	FP-POS values for G160M/1600	
	00	and the Deuter	uni enposin e of		nosen eccanse prem				1 1 00 values jor 010012 10001	
						8				

Proposal 14525 - G160M/1600 for HV 163/159 (16) - Characterization of COS/FUV detector modal gain at Lifetime Position 4 Move apertu NONE 0.0 Secs (0 Secs) COS, ALIGN/APER XAPER=-215 QESIPARM XSTEP re to LP4 loc S 52 [==>]ation for Seg [1] ment B Comments: Put the aperture in the appropriate position to illuminate the LP4 region of the detector when illuminating Segment A with G130M/1309. PSA LAPXSTP value at LP3 is 182.1 Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at LP4 Position is -33 Therefore, XAPER is set to -33 - 182.1 = -215. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS 52" [(-215 - -267) = 52] Special Requirement is necessary to move the aperture to the correct loca tion. 7 G160M/160 DEUTERIUM COS/FUV, TIME-TAG, FCA G160M CURRENT=MEDIU 400 Secs (400 Secs) 0 Deuterium M: 1600 A [==>] Exposure at BUFFER-TIME=11 LP3 [1] 1; FP-POS=4 Comments: Deuterium exposure optimized for Segment B. FP-POS=1 was chosen because previous observations show that it has slightly more counts than the other FP-POS values for G160M/1600. Return to no DARK S/C, DATA, NONE SPEC COM INSTR 50 Secs (50 Secs) 8 minal HV fo ELHVADJPROP; [==>]r standard m **OESIPARM ENDC** odes TSA 167; [1] QESIPARM ENDC **TSB** 169 Comments: Set HV to nominal values used for the standard modes (167/169). HV increase is (167-163) = 4 for Segment A, and (169-159) = 10 for Segment B. Therefore, exposure time is 39 seconds + ceiling(10*1.1) = 50 seconds Server Version: 20160601 Orbit 1 Unused Orbital Visibility = 3210 Exp. 2 Exp. 8 Exp. 4 Exp. 6 **Orbit Structure** Occultation Exp. 1 Exp. 3 Exp. 5 Exp. 7 Home 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 n 5500 sec

Proposal 14525 - G130M/1309 for HV 167/163 (23) - Characterization of COS/FUV detector modal gain at Lifetime Position 4

Γ		Proposal 14525, G130M/1309 for HV 167/163 (23), implementation Fri Jul 29 17:44:25 GMT 2016	5					
Ŀ:	£	Diagnostic Status: Warning						
	/is	Scientific Instruments: S/C, COS, COS/FUV						
[-	Special Requirements: BEFORE 17-JUL-2016:00:00; PARALLEL						
		Comments: This visit collects deuterium lamp data using G130M/1309 at 3 aperture positions using HV values of 167/163.						
	cs	(G130M/1309 for HV 167/163 (23)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU						
Ľ	sti	(Move aperture to LP2 location for Segment A (23.002)) Warning (Form): This ALIGN/APER exposure should be preceded by a science exposure to define the starting position for the scan.						
	0 U							
L	ag							
	ā							

Proposal 14525 - G130M/1309 for HV 167/163 (23) - Characterization of COS/FUV detector modal gain at Lifetime Position 4

	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Adjust HV t	DARK	S/C, DATA, NONE			SAA CONTOUR 31	;	295 Secs (295 Secs)	
		o 167/163					SPEC COM INSTR ELHLTHVF;		[==>]	
							QASISTATES COS			
							FUV HVLOW HVN OM:			
							QESIPARM ENDC TSA 167;			[1]
							QESIPARM ENDC TSB 163;			
							OESIPARM SEGM			
							ENT AB			
	Com	ments: Adjust	the HV to 167/10	53					1	
	2	Move apertu re to LP2 loc		COS, ALIGN/APER		XAPER=-413			0.0 Secs (0 Secs)	
		ation for Seg							[==>]	[1]
	Com		anerture in the	appropriate position to illuminate the LP.	? region of the detec	tor when illuminating Se	ament A with G130M/1	309		
			<u>^</u>		2 region of the detect	ior when tituminating Se	gmeni A wiin 015014/1	509.		
			ue at LP3 is 182. value for FCA to	1 9 illuminate Segment A with G130M/1309) at LP2 Position is -	231				
			v	Ũ						
	1 ner		is set to -231 - 1 DEUTERIUM	$\frac{62.1 = -415}{COS/FUV, TIME-TAG, FCA}$	G130M	CURRENT=MEDIU	T		400 Secs (400 Secs)	
ŝ	5	9 Deuterium		C05/10 V, 11012-1A0, 1CA	1309 A	M;)		[==>]	
ure		Exposure at LP2			1507 A	BUFFER-TIME=11			1	[1]
Exposures		212				1;				[1]
х Х	G				, , .	FP-POS=1				
ш		Move apertu		timized for Segment A. FP-POS=1 was c COS, ALIGN/APER	chosen because previ	Ous observations show th XAPER=-260		counts than the other	0.0 Secs (0 Secs)	
		re to LP3 loc		COS, ALION/APER		AAPEK=-200	QESIPARM XSTEP S 153		[==>]	
		ation for Seg ment A							[>]	[1]
	Com	ments: Put the	e aperture in the	appropriate position to illuminate the LP.	3 region of the detect	tor when illuminating Se	gment A with G130M/1	309.		
			ue at LP3 is 182. value for FCA to	1 9 illuminate Segment A with G130M/1309) at LP3 Position is -	78				
			v	2.1 = -260. *HOWEVER*, because of the			3" [(-260413) = 153]	Special Requirement	t is necessary to move the aperture to th	e correct lo
	catio	on.	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M	CURRENT=MEDIU		^	400 Secs (400 Secs)	
	5	9 Deuterium		COD/1 C V, 11012-1AO, 1 CA	1309 A	M;	, ,		[==>]	
		Exposure at LP3			1507 1	BUFFER-TIME=11			1	[1]
		210				1;				[1]
	G				, , .	FP-POS=1				
	Com	ments: Deuter	ium exposure op	timized for Segment A. FP-POS=1 was c	chosen because previ	ous observations show the	hat it has slightly more	counts than the other	FP-POS values for G130M/1309.	
						11				

Proposal 14525 - G130M/1309 for HV 167/163 (23) - Characterization of COS/FUV detector modal gain at Lifetime Position 4 Move apertu NONE 0.0 Secs (0 Secs) COS, ALIGN/APER XAPER=-206 QESIPARM XSTEP re to LP4 loc S 54 [==>]ation for Seg [1] ment A Comments: Put the aperture in the appropriate position to illuminate the LP4 region of the detector when illuminating Segment A with G130M/1309. PSA LAPXSTP value at LP3 is 182.1 Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at LP4 Position is -24 Therefore, XAPER is set to -24 - 182.1 = -206. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS 54" [(-206 - -260) = 54] Special Requirement is necessary to move the aperture to the correct loca tion. 7 G130M/130 DEUTERIUM COS/FUV, TIME-TAG, FCA G130M CURRENT=MEDIU 400 Secs (400 Secs) 9 Deuterium M: 1309 A [==>] Exposure at BUFFER-TIME=11 LP3 [1] 1; FP-POS=1 Comments: Deuterium exposure optimized for Segment A. FP-POS=1 was chosen because previous observations show that it has slightly more counts than the other FP-POS values for G130M/1309. Return to no DARK S/C, DATA, NONE SPEC COM INSTR 46 Secs (46 Secs) 8 minal HV fo ELHVADJPROP; [==>]r standard m **OESIPARM ENDC** odes TSA 167; [1] QESIPARM ENDC **TSB** 169 Comments: Set HV to nominal values used for the standard modes (167/169). HV increase is (167-167) = 0 for Segment A, and (169-163) = 6 for Segment B. Therefore, exposure time is 39 seconds + ceiling(6*1.1) = 46 seconds Server Version: 20160601 Orbit 1 Unused Orbital Visibility = 3210 Exp. 2 Exp. 6 Exp. 8 Exp. 4 **Orbit Structure** Home Occultation Exp. 1 Exp. 3 Exp. 5 Exp. 7 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 n 5500 sec

Proposal 14525 - G160M/1600 for HV 167/163 (26) - Characterization of COS/FUV detector modal gain at Lifetime Position 4

	Proposal 14525, G160M/1600 for HV 167/163 (26), implementation	Fri Jul 29 17:44:26 GMT 2016					
E.	Diagnostic Status: Warning						
i,	Scientific Instruments: S/C, COS, COS/FUV						
[Special Requirements: BEFORE 17-JUL-2016:00:00; PARALLEL						
	omments: This visit collects deuterium lamp data using G160M/1600 at 3 aperture positions using HV values of 167/163.						
ű	(G160M/1600 for HV 167/163 (26)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU						
i.	(Move aperture to LP2 location for Segment B (26.002)) Warning (Form): This ALIGN/APER exposure should be preceded by a science exposure to define the starting position for the set	can.					
Ē							

Proposal 14525 - G160M/1600 for HV 167/163 (26) - Characterization of COS/FUV detector modal gain at Lifetime Position 4

	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Adjust HV t	DARK	S/C, DATA, NONE			SAA CONTOUR 31	;	295 Secs (295 Secs)	
		o 167/163					SPEC COM INSTR ELHLTHVF;		[==>]	
							QASISTATES COS			
							FUV HVLOW HVN OM:			
							QESIPARM ENDC			[1]
							TSA 167;			
							QESIPARM ENDC TSB 163;			
							QESIPARM SEGM			
	_						ENT AB			
	Com		the HV to 167/1	63 COS, ALIGN/APER		XAPER=-425			0.0 Secs (0 Secs)	
	2	Move apertu re to LP2 loc		COS, ALION/APER		AAPEK=-423			[==>]	
		ation for Seg ment B							1>}	[1]
	Com		e aperture in the	appropriate position to illuminate the LP2	2 region of the detect	tor when illuminating Se	gment b with G160M/1	600.		
	PSA	LAPXSTP val	ue at LP3 is 182	2.1						
				to illuminate Segment B with G160M/1600	at LP2 Position is -	243				
	Ther	efore, XAPER	is set to -243	182.1 = -425						
~	3	G160M/160 0 Deuterium	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M	CURRENT=MEDIU M:	J		400 Secs (400 Secs)	_
Exposures		Exposure at			1600 A	M, BUFFER-TIME=11	1		[==>]	
nsc		LP2				1;				[1]
ğ						FP-POS=4				
ш	Com			ptimized for Segment B. FP-POS=4 was c	hosen because previ			counts than the other		
	4	Move apertu re to LP3 loc		COS, ALIGN/APER		XAPER=-267	QESIPARM XSTEP S 158		0.0 Secs (0 Secs) [==>]	
		ation for Seg ment B								[1]
	Com		e aperture in the	appropriate position to illuminate the LP.	3 region of the detect	tor when illuminating Se	gment B with G160M/1	600.		
	PSA	LAPXSTP val	ue at LP3 is 182	2.1						
				to illuminate Segment B with G160M/1600	at LP3 Position is -	85				
	Ther catio		is set to -85 - 18	82.1 = -267. *HOWEVER*, because of the	TRANS rules, the "	QESIPARM XSTEPS 15	8" [(-267425) = 158]] Special Requirement	t is necessary to move the aperture to the	e correct lo
	5		DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M	CURRENT=MEDIU	J		400 Secs (400 Secs)	
		0 Deuterium Exposure at			1600 A	M; BUFFER-TIME=11	1		[==>]	
		LP3				1;	<u>i</u>			[1]
						FP-POS=4				
	Com	ments: Deuter	ium exposure op	ptimized for Segment B. FP-POS=4 was c	hosen because previ	ous observations show the	hat it has slightly more	counts than the other	FP-POS values for G160M/1600.	
						1/				

Proposal 14525 - G160M/1600 for HV 167/163 (26) - Characterization of COS/FUV detector modal gain at Lifetime Position 4 0.0 Secs (0 Secs) Move apertu NONE COS, ALIGN/APER XAPER=-215 QESIPARM XSTEP re to LP4 loc S 52 [==>]ation for Seg [1] ment B Comments: Put the aperture in the appropriate position to illuminate the LP4 region of the detector when illuminating Segment A with G130M/1309. PSA LAPXSTP value at LP3 is 182.1 Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at LP4 Position is -33 Therefore, XAPER is set to -33 - 182.1 = -215. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS 52" [(-215 - -267) = 52] Special Requirement is necessary to move the aperture to the correct loca tion. 7 G160M/160 DEUTERIUM COS/FUV, TIME-TAG, FCA G160M CURRENT=MEDIU 400 Secs (400 Secs) 0 Deuterium M: 1600 A [==>] Exposure at BUFFER-TIME=11 LP3 [1] 1; FP-POS=4 Comments: Deuterium exposure optimized for Segment B. FP-POS=1 was chosen because previous observations show that it has slightly more counts than the other FP-POS values for G160M/1600. Return to no DARK S/C, DATA, NONE SPEC COM INSTR 46 Secs (46 Secs) 8 minal HV fo ELHVADJPROP; [==>]r standard m **OESIPARM ENDC** odes TSA 167; [1] QESIPARM ENDC **TSB** 169 Comments: Set HV to nominal values used for the standard modes (167/169). HV increase is (167-167) = 0 for Segment A, and (169-163) = 6 for Segment B. Therefore, exposure time is 39 seconds + ceiling(6*1.1) = 46 seconds Orbit 1 Server Version: 20160601 Exp. 1 Unused Orbital Visibility = 3210 Exp. 8 Exp. 2 Exp. 4 Exp. 6 **Orbit Structure** Occultation Exp. 3 Exp. 5 Exp. 7 Home 500 3000 5000 1000 1500 20002500 3500 4000 4500 5500 sec 0

Proposal 14525 - G130M/1309 for HV 171/167 (33) - Characterization of COS/FUV detector modal gain at Lifetime Position 4

		Proposal 14525, G130M/1309 for HV 171/167 (33), implementation Fri Jul 29 17:44:26 GMT	2016						
<u>.</u>	₽	Diagnostic Status: Warning							
	/IS	Scientific Instruments: S/C, COS, COS/FUV							
[-	Special Requirements: BEFORE 17-JUL-2016:00:00; PARALLEL	pecial Requirements: BEFORE 17-JUL-2016:00:00; PARALLEL						
		Comments: This visit collects deuterium lamp data using G130M/1309 at 3 aperture positions using HV values of 171/167.							
		(G130M/1309 for HV 171/167 (33)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU							
	Sti	(Move aperture to LP2 location for Segment A (33.002)) Warning (Form): This ALIGN/APER exposure should be preceded by a science exposure to define the starting position for the scan.							
	o L								
	ag								
Ľ	ā								

Proposal 14525 - G130M/1309 for HV 171/167 (33) - Characterization of COS/FUV detector modal gain at Lifetime Position 4

	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Adjust HV t	DARK	S/C, DATA, NONE			SAA CONTOUR 31	;	295 Secs (295 Secs)	
		o 171/167					SPEC COM INSTR ELHLTHVF;		[==>]	
							QASISTATES COS			
							FUV HVLOW HVN			
							OM; QESIPARM ENDC			[1]
							TSA 171;			[1]
							QESIPARM ENDC TSB 167;			
							OESIPARM SEGM			
							ENT AB			
	Com	ments: Adjust	the HV to 171/167	,						1
	2	Move apertu re to LP2 loc		COS, ALIGN/APER		XAPER=-413			0.0 Secs (0 Secs)	
		ation for Seg							[==>]	[1]
	a	ment A						200		.,
	Com	ments: Put the	e aperture in the ap	ppropriate position to illuminate the LP2	<i>2 region of the detect</i>	tor when illuminating Se	gment A with G130M/1	309.		
			ue at LP3 is 182.1	illuminate Segment A with G130M/1309	at IP? Position is	231				
			0	0	ui Li 2 i Ostiton is	231				
	Ther		is set to -231 - 182 DEUTERIUM		C12014	CURRENT MEDI	T		400.5 (400.5)	
S	3	9 Deuterium	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M 1309 A	CURRENT=MEDIU M;			400 Secs (400 Secs)	
ure		Exposure at LP2	at		1509 A	BUFFER-TIME=11			[>]	
OSI						1;				[1]
Exposures	FP-POS=1									
ш		Move apertu		COS, ALIGN/APER	nosen because previ	XAPER=-260	QESIPARM XSTEP	ounts than the other	0.0 Secs (0 Secs)	
		re to LP3 loc		COS, ALIOIVAI EK		AAI EK=-200	S 153		[==>]	
		ation for Seg ment A								[1]
	Com	Comments: Put the aperture in the appropriate position to illuminate the LP3 region of the detector when illuminating Segment A with G130M/1309.								
	PSA	PSA LAPXSTP value at LP3 is 182.1								
				illuminate Segment A with G130M/1309	at LP3 Position is -	78				
	Therefore, XAPER is set to -78 - 182.1 = -260. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS 153" [(-260413) = 153] Special Requirement is necessary to move the aperture to the correct lo									
	catio 5		DELITERUR		012014	CUDDENTE MEET			100.0 (100.0)	
	5	9 Deuterium	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M 1309 A	CURRENT=MEDIU M;	J		400 Secs (400 Secs)	
		Exposure at LP3			1509 A	BUFFER-TIME=11	1		[==>]	(1)
		LI 5				1;	1;			[1]
	FP-POS=1									
	Comments: Deuterium exposure optimized for Segment A. FP-POS=1 was chosen because previous observations show that it has slightly more counts than the other FP-POS values for G130M/1309.									
						17				

Proposal 14525 - G130M/1309 for HV 171/167 (33) - Characterization of COS/FUV detector modal gain at Lifetime Position 4 Move apertu NONE 0.0 Secs (0 Secs) COS, ALIGN/APER XAPER=-206 QESIPARM XSTEP re to LP4 loc S 54 [==>]ation for Seg [1] ment A Comments: Put the aperture in the appropriate position to illuminate the LP4 region of the detector when illuminating Segment A with G130M/1309. PSA LAPXSTP value at LP3 is 182.1 Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at LP4 Position is -24 Therefore, XAPER is set to -24 - 182.1 = -206. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS 54" [(-206 - -260) = 54] Special Requirement is necessary to move the aperture to the correct loca tion. 7 G130M/130 DEUTERIUM COS/FUV, TIME-TAG, FCA G130M CURRENT=MEDIU 400 Secs (400 Secs) 9 Deuterium M: 1309 A [==>] Exposure at BUFFER-TIME=11 LP3 [1] 1; FP-POS=1 Comments: Deuterium exposure optimized for Segment A. FP-POS=1 was chosen because previous observations show that it has slightly more counts than the other FP-POS values for G130M/1309. Return to no DARK S/C, DATA, NONE SPEC COM INSTR 42 Secs (42 Secs) 8 minal HV fo ELHVADJPROP; [==>]r standard m **OESIPARM ENDC** odes TSA 167; [1] QESIPARM ENDC **TSB** 169 Comments: Set HV to nominal values used for the standard modes (167/169). HV change is (167-171) = -4 for Segment A, and (169-167) = 2 for Segment B. Therefore, exposure time is 39 seconds + ceiling(2*1.1) = 42 seconds Server Version: 20160601 Orbit 1 Unused Orbital Visibility = 3210 Exp. 2 Exp. 6 Exp. 8 Exp. 4 **Orbit Structure** Home Occultation Exp. 1 Exp. 3 Exp. 5 Exp. 7 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 n 5500 sec

Proposal 14525 - G160M/1600 for HV 171/167 (36) - Characterization of COS/FUV detector modal gain at Lifetime Position 4

	Proposal 14525, G160M/1600 for HV 171/167 (36), implementation						
/isit	Diagnostic Status: Warning						
	Scientific Instruments: S/C, COS, COS/FUV						
[Special Requirements: BEFORE 17-JUL-2016:00:00; PARALLEL						
	Comments: This visit collects deuterium lamp data using G160M/1600 at 3 aperture positions using HV values of 171/167.						
stics	(G160M/1600 for HV 171/167 (36)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU						
	(Move aperture to LP2 location for Segment B (36.002)) Warning (Form): This ALIGN/APER exposure should be preceded by a science exposure to define the starting position for the scan.						
iag							
Ľ							

Proposal 14525 - G160M/1600 for HV 171/167 (36) - Characterization of COS/FUV detector modal gain at Lifetime Position 4

	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Adjust HV t	DARK	S/C, DATA, NONE			SAA CONTOUR 31		295 Secs (295 Secs)	
		o 171/167					SPEC COM INSTR ELHLTHVF;		[==>]	
							QASISTATES COS			
							FUV HVLOW HVN OM:			
							QESIPARM ENDC			[1]
							TSA 171;			[1]
							QESIPARM ENDC TSB 167;			
							OESIPARM SEGM			
							ÈNT AB			
	Com		the HV to 171/1							
	2	Move apertu re to LP2 loc ation for Seg ment B		COS, ALIGN/APER		XAPER=-425			0.0 Secs (0 Secs) [==>]	
									[==>]	[1]
	Com		e aperture in the	appropriate position to illuminate the LP2	2 region of the detect	tor when illuminating Se	gment b with G160M/1	500.		
			ue at LP3 is 182		0 9	0	0			
				o illuminate Segment B with G160M/1600	at LP2 Position is -	243				
	Ther	efore, XAPER	is set to -243	182.1 = -425						
	3			COS/FUV, TIME-TAG, FCA	G160M	CURRENT=MEDIU			400 Secs (400 Secs)	
Exposures		0 Deuterium Exposure at			1600 A	M; BUFFER-TIME=11		[==>	[==>]	
nso		LP2				1;	L			[1]
ğ						FP-POS=4				
ш	Com			ptimized for Segment B. FP-POS=4 was c	hosen because previ			counts than the other		
	4	Move apertu re to LP3 loc		COS, ALIGN/APER		XAPER=-267	QESIPARM XSTEP S 158		0.0 Secs (0 Secs)	
	ation	ation for Seg ment B							[==>]	[1]
	Com	Comments: Put the aperture in the appropriate position to illuminate the LP3 region of the detector when illuminating Segment B with G160M/1600.								
		PSA LAPXSTP value at LP3 is 182.1								
				o illuminate Segment B with G160M/1600	at LP3 Position is -	85				
	Therefore, XAPER is set to -85 - 182.1 = -267. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS 158" [(-267425) = 158] Special Requirement is necessary to move the aperture to the correct lo cation.									
	5	5 G160M/160 DEUTERIU 0 Deuterium Exposure at LP3	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M 1600 A	CURRENT=MEDIU M;	J		400 Secs (400 Secs)	
						BUFFER-TIME=1 1;	1		[==>]	
										[1]
	FP-POS=4									
	Comments: Deuterium exposure optimized for Segment B. FP-POS=4 was chosen because previous observations show that it has slightly more counts than the other FP-POS values for G160M/1600.									
						20				

Proposal 14525 - G160M/1600 for HV 171/167 (36) - Characterization of COS/FUV detector modal gain at Lifetime Position 4 Move apertu NONE 0.0 Secs (0 Secs) COS, ALIGN/APER XAPER=-215 QESIPARM XSTEP re to LP4 loc S 52 [==>]ation for Seg [1] ment B Comments: Put the aperture in the appropriate position to illuminate the LP4 region of the detector when illuminating Segment A with G130M/1309. PSA LAPXSTP value at LP3 is 182.1 Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at LP4 Position is -33 Therefore, XAPER is set to -33 - 182.1 = -215. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS 52" [(-215 - -267) = 52] Special Requirement is necessary to move the aperture to the correct loca tion. 7 G160M/160 DEUTERIUM COS/FUV, TIME-TAG, FCA G160M CURRENT=MEDIU 400 Secs (400 Secs) 0 Deuterium M: 1600 A [==>] Exposure at BUFFER-TIME=11 LP3 [1] 1; FP-POS=4 Comments: Deuterium exposure optimized for Segment B. FP-POS=1 was chosen because previous observations show that it has slightly more counts than the other FP-POS values for G160M/1600. Return to no DARK S/C, DATA, NONE SPEC COM INSTR 42 Secs (42 Secs) 8 minal HV fo ELHVADJPROP; [==>]r standard m **OESIPARM ENDC** odes TSA 167; [1] QESIPARM ENDC **TSB** 169 Comments: Set HV to nominal values used for the standard modes (167/169). HV change is (167-171) = -4 for Segment A, and (169-167) = 2 for Segment B. Therefore, exposure time is 39 seconds + ceiling(2*1.1) = 42 seconds Server Version: 20160601 Orbit 1 Unused Orbital Visibility = 3210 Exp. 2 Exp. 8 Exp. 4 Exp. 6 **Orbit Structure** Occultation Exp. 1 Exp. 3 Exp. 5 Exp. 7 Home 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 n 5500 sec