16829 - Cycle 29 COS FUV Detector Gain Maps

Cycle: 29, 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?*
2A	DARK DEUTERIUM NONE	COS COS/FUV S/C	1	21-May-2022 07:00:20.0	yes
2C	DARK DEUTERIUM NONE	COS COS/FUV S/C	1	21-May-2022 07:00:22.0	yes
3A	DARK DEUTERIUM NONE	COS COS/FUV S/C	1	21-May-2022 07:00:23.0	yes
3C	DARK DEUTERIUM NONE	COS COS/FUV S/C	1	21-May-2022 07:00:25.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
4A	DARK DEUTERIUM NONE	COS COS/FUV S/C	1	21-May-2022 07:00:26.0	yes
4C	DARK DEUTERIUM NONE	COS COS/FUV S/C	1	21-May-2022 07:00:28.0	yes
5A	DARK DEUTERIUM NONE	COS COS/FUV S/C	1	21-May-2022 07:00:29.0	yes
5C	DARK DEUTERIUM NONE	COS COS/FUV S/C	1	21-May-2022 07:00:31.0	yes

8 Total Orbits Used

ABSTRACT

This program uses the deuterium lamp to illuminate the regions of the detector being used to collect spectra during Cycle 29. The data obtained will be used to create gain maps of the detector. Because of the strongly varying intensity of the lamp as a function of wavelength, G130M/1309 data will be obtained for Segment A, and G160M/1600 will be used for Segment B.

Gain map data will be obtained at ~6 month intervals for modes where the voltage is unchanged. Obtaining a gain map at these times will help to improve the modeling of the modal gain as a function of time and extracted charge, since it will provide data that cover the full time span of each high voltage at each LP. Improving these models will allow better predictions of the future lifetime 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 where the spectra fall. In order to 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.

Gain maps should be taken at ~6 month and ~1 year intervals when the default HV does not change. They should be obtained at the appropriate HV levels and detector Lifetime Positions.

The plan for Cycle 29 includes 8 one-orbit visits:

*Visits 2A and 2C will be taken at LP2 after about 6 months and 1 year from the gain map taken at this position near the end of Cycle 28 at the nominal LP2 HV values (currently 173/175).

*Visits 3A and 3C will be taken at LP3 after about 6 months and 1 year from the gain map taken at this position near the end of Cycle 28 at the nominal LP3 HV values (currently 173/175).

*Visits 4A and 4C will be taken at LP4 after about 6 months and 1 year from the gain map taken at this position at the beginning of Cycle 29 at the nominal LP4 HV values (173/169).

*Visits 5A and 5C will be taken at LP5 after about 6 months and 1 year from the gain map taken at this position at the beginning of Cycle 29 at the nominal LP5 HV values (167/169).

The procedure for collecting this data in each visit is given below.

* Take an exposure at LP1 to set up the aperture position and HV. This can also be used to measure the gain at LP1. These exposures will use G130M/1309 for visits 2A, 2C, 3A, and 3C; and G160M/1600 for visits 4A, 4C, 5A, and 5C.

* Adjust the HV values

* Adjust the aperture in the cross dispersion direction so that the deuterium lamp will illuminate the appropriate region on Segment A when using G130M/1309.

* Take a 440 second deuterium lamp exposure using both detector segments.

* Adjust the aperture to a second cross-dispersion location to obtain additional coverage on Segment A and take another 440 second deuterium lamp exposure.

* Adjust the aperture in the cross dispersion direction so that the deuterium lamp will illuminate the appropriate region on Segment B when using G160M/1600.

* Take a 440 second deuterium lamp exposure using both detector segments.

* Adjust the aperture to a second cross-dispersion location to obtain additional coverage on Segment B and take another 440 second deuterium lamp exposure.

* Return the aperture to the HOME position

Note that because TRANS resets its aperture zero point when FCA exposures are taken, the aperture is explicitly moved using "QESIPARM XSTEPS", as was done in Program 13970, 14439, 14519, 14941, 15534, 15772, etc.

For reference, the soft and hard stops for the apertures are listed below. All aperture moves are within these ranges.
MEB1:
SOFT STOPS = -275 to 275
HARD STOPS = -282 to 285

MEB2:
SOFT STOPS = -275 to 275
HARD STOPS = -284 to 283

The initial exposure of each visit uses the FCA_LP1 aperture position, LAPXSTP = -153. Thus all XAPER values are relative to that position.

Summary table:

Visit	LP	Grating/Segment	Y Position	LAPXSTP	XAPER
2A/2C	2	G130M/A	1	-213	-60
2A/2C	2	G130M/A	2	-267*	-114
2A/2C	2	G160M/B	1	-225	-72
2A/2C	2	G160M/B	2	-267*	-114
3A/3C	3	G130M/A	1	-72	+81
3A/3C	3	G130M/A	2	-128	+25
3A/3C	3	G160M/B	1	-84	+69
3A/3C	3	G160M/B	2	-140	+13
4A/4C	4	G130M/A	1	-32	+121
4A/4C	4	G130M/A	2	-86	+67
4A/4C	4	G160M/B	1	-41	+112
4A/4C	4	G160M/B	2	-95	+58
5A/5C	5	G130M/A	1	-213	-60
5A/5C	5	G130M/A	2	-267*	-114
5A/5C	5	G160M/B	1	-225	-72
5A/5C	5	G160M/B	2	-267*	-114

* Limited to be within the soft stops

The LP2 and LP5 aperture positions are identical, but the Y extent of the spectra on the detector is large enough to cover the detector region used for both LPs.

5/20/22

Since we will be changing the FUVB HV for LP4 from 169 to 175 in June 2022, the HV values specified for visit 4C were changed from 173/169 to 173/175.

Proposal 16829 - ~6 months after last Cycle 28 LP2 gain map (2A) - Cycle 29 COS FUV Detector Gain Maps

Visit	**Proposal 16829, ~6 months after last Cycle 28 LP2 gain map (2A), completed** Sat May 21 11:00:31 GMT 2022 **Diagnostic Status: Warning** Scientific Instruments: S/C, COS, COS/FUV Special Requirements: BETWEEN 01-APR-2022:00:00:00 AND 01-MAY-2022:00:00:00; PARALLEL *Comments: This visit collects data at LP2. It uses the HV values appropriate for LP2 (173/175).*
Diagnostics	(~6 months after last Cycle 28 LP2 gain map (2A)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	G130M/1309 Deuterium Exposure - Set up at LP1	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M 1309 A	CURRENT=MEDIUM; BUFFER-TIME=196; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=LP1			125 Secs (125 Secs) *[==>]*	***[1]***
	Comments: Short exposure to set aperture to LP1, which is near the center of the aperture range used in this program. It also sets the HV to the LP1 values.								
2	Adjust HV to LP2 values	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR ELHVADJPROP; QASISTATES COS FUV HVNOM HVNOM; QESIPARM ENDCTSA 173; QESIPARM ENDCTSB 175; QESIPARM SEGMENT AB		39 Secs (39 Secs) *[==>]*	***[1]***
	Comments: Adjust the HV to the LP2 values. *Since the HV is not increasing, exposure time = 39 seconds*								
3	Aperture Adjustment 1 for Segment A	NONE	COS, ALIGN/APER		XAPER=-60			0.0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: Put the aperture in the appropriate position to illuminate a portion of the LP2 region of the detector when illuminating Segment A with G130M/1309. *FCA LAPXSTP value at LP1 is -153* *Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 1 for LP2 is -213* *Therefore, XAPER is set to -213 - -153 = -60*								
4	G130M/1309 Deuterium Exposure 1	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M 1309 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=LP1			440 Secs (440 Secs) *[==>]*	***[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.								
5	Aperture Adjustment 2 for Segment A	NONE	COS, ALIGN/APER		XAPER=-114	QESIPARM XSTEPS -54		0.0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: Put the aperture in the appropriate position to illuminate a portion of the LP2 region of the detector when illuminating Segment A with G130M/1309. *FCA LAPXSTP value at LP1 is -153* *Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 2 for LP2 is -267* *Therefore, XAPER is set to -267 - -153 = -114. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS -54" [(-114 - -60) = -54] Special Requirement is necessary to move the aperture to the correct location.*								

6	G130M/1309 Deuterium Exposure 2	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M 1309 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=LP1		440 Secs (440 Secs) *[==>]*	***[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.

7	Aperture Adjustment 1 for Segment B	NONE	COS, ALIGN/APER		XAPER=-72	QESIPARM XSTEPS 42	0.0 Secs (0 Secs) *[==>]*	***[1]***

Comments: Put the aperture in the appropriate position to illuminate a portion of the LP2 region of the detector when illuminating Segment B with G160M/1600.

FCA LAPXSTP value at LP1 is -153
Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at Position 1 for LP2 is -225

*Therefore, XAPER is set to -225 - -153 = -72. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS 42" [(-72 - -114) = +42] Special Requirement is necessary to move the aperture to the correct location.*

8	G160M/1600 Deuterium Exposure 1	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M 1600 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=4; SEGMENT=BOTH; LIFETIME-POS=LP1		440 Secs (440 Secs) *[==>]*	***[1]***

Comments: Deuterium exposure optimmized for Segment B. FP-POS=4 was chosen because previous observations show that it has slightly more counts than the other FP-POS values.

9	Aperture Adjustment 2 for Segment B	NONE	COS, ALIGN/APER		XAPER=-114	QESIPARM XSTEPS -42	0.0 Secs (0 Secs) *[==>]*	***[1]***

Comments: Put the aperture in the appropriate position to illuminate a portion of the LP2 region of the detector when illuminating Segment B with G160M/1600.

FCA LAPXSTP value at LP1 is -153
Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at Position 2 for LP2 is -280, but the aperture soft stop is at -275 and we don't want to exceed that value when including the 5 step overshoot. To leave some pad, I will set it to match the G130M exposure (-267).

*Therefore, XAPER is set to -267 - -153 = -114. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS -42" [(-114 - -72) = -42] Special Requirement is necessary to move the aperture to the correct location.*

10	G160M/1600 Deuterium Exposure 2	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M 1600 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=4; SEGMENT=BOTH; LIFETIME-POS=LP1		440 Secs (440 Secs) *[==>]*	***[1]***

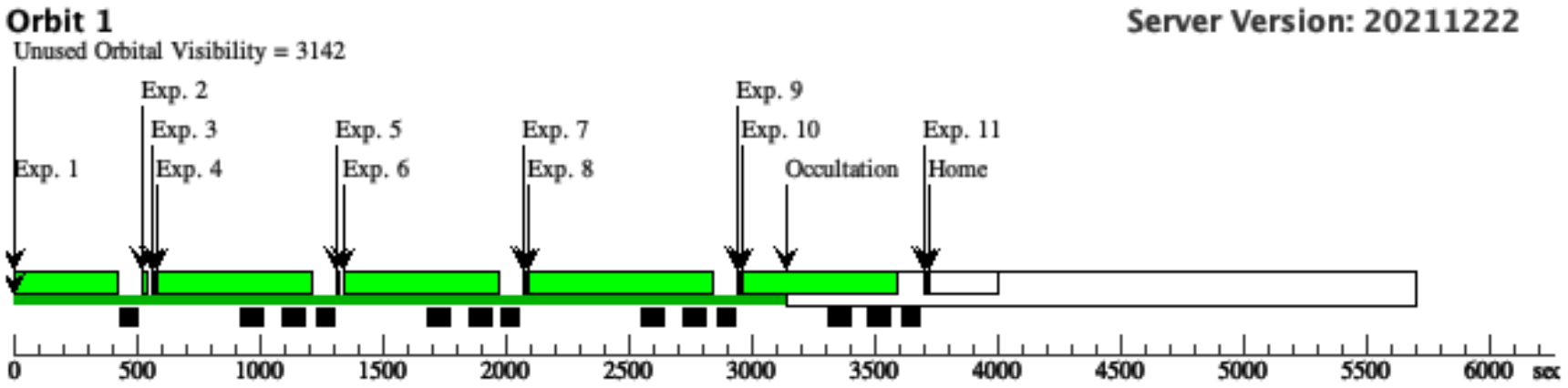
Comments: Deuterium exposure optimmized for Segment B. FP-POS=4 was chosen because previous observations show that it has slightly more counts than the other FP-POS values.

	11	Return Aperture to Nominal Position	NONE	COS, ALIGN/APER	XAPER=0	QESIPARM XSTEPS 114	0 Secs (0 Secs) *[==>]*	***[1]***

Comments: Return aperture to nominal position by setting XAPER=0

**HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS +114" [(0 - -114) = +114] Special Requirement is necessary to move the aperture to its correct location.*

Orbit Structure



Visit	**Proposal 16829, ~12 months after last Cycle 28 LP2 gain map (2C), scheduling** Sat May 21 11:00:31 GMT 2022 **Diagnostic Status: Warning** Scientific Instruments: S/C, COS, COS/FUV Special Requirements: BETWEEN 01-OCT-2022:00:00:00 AND 01-NOV-2022:00:00:00; PARALLEL *Comments: This visit collects data at LP2. It uses the HV values appropriate for LP2 (173/175).*
Diagnostics	(~12 months after last Cycle 28 LP2 gain map (2C)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	G130M/1309 Deuterium Exposure - Set up at LP1	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M 1309 A	CURRENT=MEDIUM; BUFFER-TIME=196; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=LP1			125 Secs (125 Secs) *[==>]*	***[1]***
	Comments: Short exposure to set aperture to LP1, which is near the center of the aperture range used in this program. It also sets the HV to the LP1 values.								
2	Adjust HV to LP2 values	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR ELHVADJPROP; QASISTATES COS FUV HVNOM HVNOM; QESIPARM ENDCTSA 173; QESIPARM ENDCTSB 175; QESIPARM SEGMENT AB		39 Secs (39 Secs) *[==>]*	***[1]***
	Comments: Adjust the HV to the LP2 values. *Since the HV is not increasing, exposure time = 39 seconds*								
3	Aperture Adjustment 1 for Segment A	NONE	COS, ALIGN/APER		XAPER=-60			0.0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: Put the aperture in the appropriate position to illuminate a portion of the LP2 region of the detector when illuminating Segment A with G130M/1309. *FCA LAPXSTP value at LP1 is -153* *Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 1 for LP2 is -213* *Therefore, XAPER is set to -213 - -153 = -60*								
4	G130M/1309 Deuterium Exposure 1	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M 1309 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=LP1			440 Secs (440 Secs) *[==>]*	***[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.								
5	Aperture Adjustment 2 for Segment A	NONE	COS, ALIGN/APER		XAPER=-114	QESIPARM XSTEPS -54		0.0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: Put the aperture in the appropriate position to illuminate a portion of the LP2 region of the detector when illuminating Segment A with G130M/1309. *FCA LAPXSTP value at LP1 is -153* *Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 2 for LP2 is -267* *Therefore, XAPER is set to -267 - -153 = -114. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS -54" [(-114 - -60) = -54] Special Requirement is necessary to move the aperture to the correct location.*								

6	G130M/1309 Deuterium Exposure 2	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M 1309 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=LP1		440 Secs (440 Secs) *[==>]*	***[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.

7	Aperture Adjustment 1 for Segment B	NONE	COS, ALIGN/APER		XAPER=-72	QESIPARM XSTEPS 42	0.0 Secs (0 Secs) *[==>]*	***[1]***

Comments: Put the aperture in the appropriate position to illuminate a portion of the LP2 region of the detector when illuminating Segment B with G160M/1600.

FCA LAPXSTP value at LP1 is -153
Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at Position 1 for LP2 is -225

*Therefore, XAPER is set to -225 - -153 = -72. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS 42" [(-72 - -114) = +42] Special Requirement is necessary to move the aperture to the correct location.*

8	G160M/1600 Deuterium Exposure 1	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M 1600 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=4; SEGMENT=BOTH; LIFETIME-POS=LP1		440 Secs (440 Secs) *[==>]*	***[1]***

Comments: Deuterium exposure optimmized for Segment B. FP-POS=4 was chosen because previous observations show that it has slightly more counts than the other FP-POS values.

9	Aperture Adjustment 2 for Segment B	NONE	COS, ALIGN/APER		XAPER=-114	QESIPARM XSTEPS -42	0.0 Secs (0 Secs) *[==>]*	***[1]***

Comments: Put the aperture in the appropriate position to illuminate a portion of the LP2 region of the detector when illuminating Segment B with G160M/1600.

FCA LAPXSTP value at LP1 is -153
Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at Position 2 for LP2 is -280, but the aperture soft stop is at -275 and we don't want to exceed that value when including the 5 step overshoot. To leave some pad, I will set it to match the G130M exposure (-267).

*Therefore, XAPER is set to -267 - -153 = -114. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS -42" [(-114 - -72) = -42] Special Requirement is necessary to move the aperture to the correct location.*

10	G160M/1600 Deuterium Exposure 2	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M 1600 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=4; SEGMENT=BOTH; LIFETIME-POS=LP1		440 Secs (440 Secs) *[==>]*	***[1]***

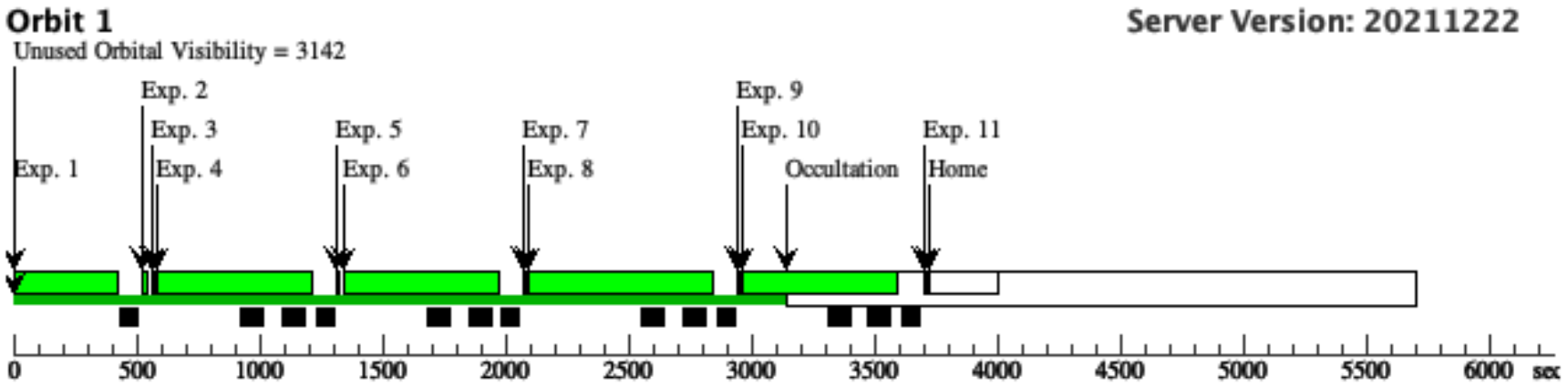
Comments: Deuterium exposure optimmized for Segment B. FP-POS=4 was chosen because previous observations show that it has slightly more counts than the other FP-POS values.

	11	Return Aperture to Nominal Position	NONE	COS, ALIGN/APER	XAPER=0	QESIPARM XSTEPS 114	0 Secs (0 Secs) *[==>]*	 ***[1]***

Comments: Return aperture to nominal position by setting XAPER=0

**HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS +114" [(0 - -114) = +114] Special Requirement is necessary to move the aperture to its correct location.*

Orbit Structure



Proposal 16829 - ~6 months after last Cycle 28 LP3 gain map (3A) - Cycle 29 COS FUV Detector Gain Maps

Visit	**Proposal 16829, ~6 months after last Cycle 28 LP3 gain map (3A), completed** Sat May 21 11:00:31 GMT 2022 **Diagnostic Status: Warning** Scientific Instruments: S/C, COS, COS/FUV Special Requirements: BETWEEN 01-APR-2022:00:00:00 AND 01-MAY-2022:00:00:00; PARALLEL *Comments: This visit collects data at LP3. It uses the HV values appropriate for LP3 (173/175).*
Diagnostics	(~6 months after last Cycle 28 LP3 gain map (3A)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	G130M/1309 Deuterium Exposure - Set up at LP1	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M 1309 A	CURRENT=MEDIUM; BUFFER-TIME=196; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=LP1			125 Secs (125 Secs) *[==>]*	***[1]***
	Comments: Short exposure to set aperture to LP1, which is near the center of the aperture range used in this program. It also sets the HV to the LP1 values.								
2	Adjust HV to LP3 values	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR ELHVADJPROP; QASISTATES COS FUV HVNOM HVNOM; QESIPARM ENDCTSA 173; QESIPARM ENDCTSB 175; QESIPARM SEGMENT AB		39 Secs (39 Secs) *[==>]*	***[1]***
	Comments: Adjust the HV to LP3 values. *Since the HV is not increasing, exposure time = 39 seconds*								
3	Aperture Adjustment 1 for Segment A	NONE	COS, ALIGN/APER		XAPER=81			0.0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: Put the aperture in the appropriate position to illuminate a portion of the LP3 region of the detector when illuminating Segment A with G130M/1309. *FCA LAPXSTP value at LP1 is -153* *Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 1 for LP3 is -72* *Therefore, XAPER is set to -72 - -153 = +81*								
4	G130M/1309 Deuterium Exposure 1	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M 1309 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=LP1			440 Secs (440 Secs) *[==>]*	***[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.								
5	Aperture Adjustment 2 for Segment A	NONE	COS, ALIGN/APER		XAPER=25	QESIPARM XSTEPS -56		0.0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: Put the aperture in the appropriate position to illuminate a portion of the LP3 region of the detector when illuminating Segment A with G130M/1309. *FCA LAPXSTP value at LP1 is -153* *Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 2 for LP3 is -128* *Therefore, XAPER is set to -128 - -153 = +25. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS -56" [(+25 - +81) = -56] Special Requirement is necessary to move the aperture to the correct location.*								

6	G130M/1309 Deuterium Exposure 2	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M 1309 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=LP1		440 Secs (440 Secs) *[==>]*	***[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.

7	Aperture Adjustment 1 for Segment B	NONE	COS, ALIGN/APER		XAPER=69	QESIPARM XSTEP S 44	0.0 Secs (0 Secs) *[==>]*	***[1]***

Comments: Put the aperture in the appropriate position to illuminate a portion of the LP3 region of the detector when illuminating Segment B with G160M/1600.

FCA LAPXSTP value at LP1 is -153
Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at Position 1 for LP3 is -84

*Therefore, XAPER is set to -84 - -153 = +69. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS 44" [(+69 - +25) = +44] Special Requirement is necessary to move the aperture to the correct location.*

8	G160M/1600 Deuterium Exposure 1	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M 1600 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=4; SEGMENT=BOTH; LIFETIME-POS=LP1		440 Secs (440 Secs) *[==>]*	***[1]***

Comments: Deuterium exposure optimmized for Segment B. FP-POS=4 was chosen because previous observations show that it has slightly more counts than the other FP-POS values.

9	Aperture Adjustment 2 for Segment B	NONE	COS, ALIGN/APER		XAPER=13	QESIPARM XSTEP S -56	0.0 Secs (0 Secs) *[==>]*	***[1]***

Comments: Put the aperture in the appropriate position to illuminate a portion of the LP3 region of the detector when illuminating Segment B with G160M/1600.

FCA LAPXSTP value at LP1 is -153
Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at Position 2 for LP3 is -140.

*Therefore, XAPER is set to -140 - -153 = +13. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS -56" [(+13 - +69) = -56] Special Requirement is necessary to move the aperture to the correct location.*

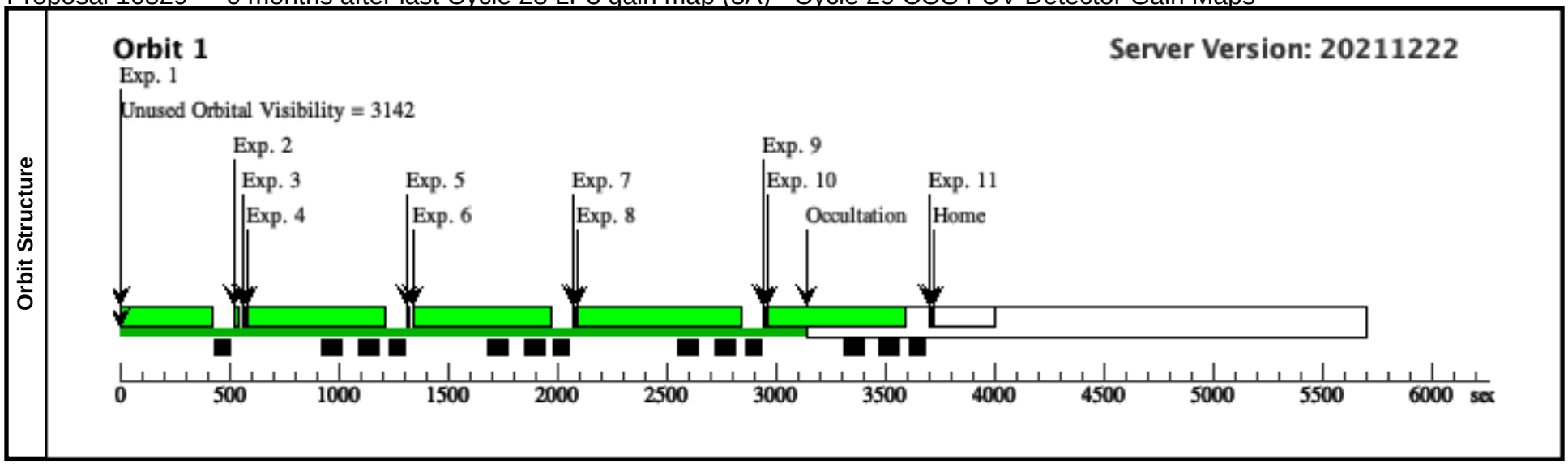
10	G160M/1600 Deuterium Exposure 2	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M 1600 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=4; SEGMENT=BOTH; LIFETIME-POS=LP1		440 Secs (440 Secs) *[==>]*	***[1]***

Comments: Deuterium exposure optimmized for Segment B. FP-POS=4 was chosen because previous observations show that it has slightly more counts than the other FP-POS values.

11	Return Aperture to Nominal Position	NONE	COS, ALIGN/APER		XAPER=0	QESIPARM XSTEP S -13	0 Secs (0 Secs) *[==>]*	***[1]***

Comments: Return aperture to nominal position by setting XAPER=0

**HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS -13" [(0 - 13) = -13] Special Requirement is necessary to move the aperture to its correct location.*


Orbit Structure
Orbit 1
Server Version: 20211222
Exp. 1
Unused Orbital Visibility = 3142
Exp. 2
Exp. 3
Exp. 4
Exp. 5
Exp. 6
Exp. 7
Exp. 8
Exp. 9
Exp. 10
Occultation
Exp. 11
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
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5500
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sec

Proposal 16829 - ~12 months after last Cycle 28 LP3 gain map (3C) - Cycle 29 COS FUV Detector Gain Maps

Visit	**Proposal 16829, ~12 months after last Cycle 28 LP3 gain map (3C), scheduling** Sat May 21 11:00:31 GMT 2022 **Diagnostic Status: Warning** Scientific Instruments: S/C, COS, COS/FUV Special Requirements: BETWEEN 01-OCT-2022:00:00:00 AND 01-NOV-2022:00:00:00; PARALLEL *Comments: This visit collects data at LP3. It uses the HV values appropriate for LP3 (173/175).*
Diagnostics	(~12 months after last Cycle 28 LP3 gain map (3C)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	G130M/1309 Deuterium Exposure - Set up at LP1	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M 1309 A	CURRENT=MEDIUM; BUFFER-TIME=196; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=LP1			125 Secs (125 Secs) *[==>]*	***[1]***
	Comments: Short exposure to set aperture to LP1, which is near the center of the aperture range used in this program. It also sets the HV to the LP1 values.								
2	Adjust HV to LP3 values	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR ELHVADJPROP; QASISTATES COS FUV HVNOM HVNOM; QESIPARM ENDCTSA 173; QESIPARM ENDCTSB 175; QESIPARM SEGMENT AB		39 Secs (39 Secs) *[==>]*	***[1]***
	Comments: Adjust the HV to LP3 values. *Since the HV is not increasing, exposure time = 39 seconds*								
3	Aperture Adjustment 1 for Segment A	NONE	COS, ALIGN/APER		XAPER=81			0.0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: Put the aperture in the appropriate position to illuminate a portion of the LP3 region of the detector when illuminating Segment A with G130M/1309. *FCA LAPXSTP value at LP1 is -153* *Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 1 for LP3 is -72* *Therefore, XAPER is set to -72 - -153 = +81*								
4	G130M/1309 Deuterium Exposure 1	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M 1309 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=LP1			440 Secs (440 Secs) *[==>]*	***[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.								
5	Aperture Adjustment 2 for Segment A	NONE	COS, ALIGN/APER		XAPER=25	QESIPARM XSTEPS -56		0.0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: Put the aperture in the appropriate position to illuminate a portion of the LP3 region of the detector when illuminating Segment A with G130M/1309. *FCA LAPXSTP value at LP1 is -153* *Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 2 for LP3 is -128* *Therefore, XAPER is set to -128 - -153 = +25. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS -56" [(+25 - +81) = -56] Special Requirement is necessary to move the aperture to the correct location.*								

6	G130M/1309 Deuterium Exposure 2	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M 1309 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=LP1		440 Secs (440 Secs) *[==>]*	***[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.

7	Aperture Adjustment 1 for Segment B	NONE	COS, ALIGN/APER		XAPER=69	QESIPARM XSTEPS 44	0.0 Secs (0 Secs) *[==>]*	***[1]***

Comments: Put the aperture in the appropriate position to illuminate a portion of the LP3 region of the detector when illuminating Segment B with G160M/1600.

FCA LAPXSTP value at LP1 is -153
Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at Position 1 for LP3 is -84

*Therefore, XAPER is set to -84 - -153 = +69. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS 44" [(+69 - +25) = +44] Special Requirement is necessary to move the aperture to the correct location.*

8	G160M/1600 Deuterium Exposure 1	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M 1600 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=4; SEGMENT=BOTH; LIFETIME-POS=LP1		440 Secs (440 Secs) *[==>]*	***[1]***

Comments: Deuterium exposure optimmized for Segment B. FP-POS=4 was chosen because previous observations show that it has slightly more counts than the other FP-POS values.

9	Aperture Adjustment 2 for Segment B	NONE	COS, ALIGN/APER		XAPER=13	QESIPARM XSTEPS -56	0.0 Secs (0 Secs) *[==>]*	***[1]***

Comments: Put the aperture in the appropriate position to illuminate a portion of the LP3 region of the detector when illuminating Segment B with G160M/1600.

FCA LAPXSTP value at LP1 is -153
Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at Position 2 for LP3 is -140.

*Therefore, XAPER is set to -140 - -153 = +13. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS -56" [(+13 - +69) = -56] Special Requirement is necessary to move the aperture to the correct location.*

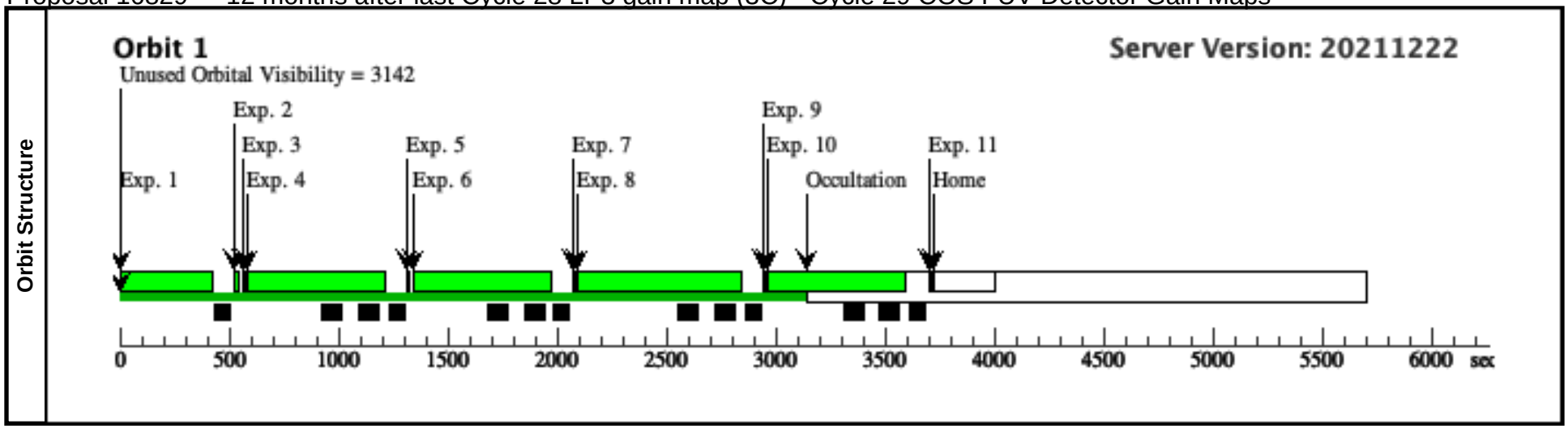
10	G160M/1600 Deuterium Exposure 2	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M 1600 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=4; SEGMENT=BOTH; LIFETIME-POS=LP1		440 Secs (440 Secs) *[==>]*	***[1]***

Comments: Deuterium exposure optimmized for Segment B. FP-POS=4 was chosen because previous observations show that it has slightly more counts than the other FP-POS values.

11	Return Aperture to Nominal Position	NONE	COS, ALIGN/APER		XAPER=0	QESIPARM XSTEPS -13	0 Secs (0 Secs) *[==>]*	***[1]***

Comments: Return aperture to nominal position by setting XAPER=0

**HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS -13" [(0 - 13) = -13] Special Requirement is necessary to move the aperture to its correct location.*


Orbit Structure
Orbit 1
Server Version: 20211222
Unused Orbital Visibility = 3142
Exp. 1
Exp. 2
Exp. 3
Exp. 4
Exp. 5
Exp. 6
Exp. 7
Exp. 8
Exp. 9
Exp. 10
Occultation
Exp. 11
Home
0
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1500
2000
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3500
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4500
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sec

Proposal 16829 - ~6 months after last Cycle 28 LP4 gain map (4A) - Cycle 29 COS FUV Detector Gain Maps

Visit	**Proposal 16829, ~6 months after last Cycle 28 LP4 gain map (4A), completed** Sat May 21 11:00:32 GMT 2022 **Diagnostic Status: Warning** Scientific Instruments: S/C, COS, COS/FUV Special Requirements: BETWEEN 01-APR-2022:00:00:00 AND 01-MAY-2022:00:00:00; PARALLEL *Comments: This visit collects data at LP4. It uses the HV values appropriate for LP4 (173/169).*
Diagnostics	(~6 months after last Cycle 28 LP4 gain map (4A)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	G160M/1600 Deuterium Exposure - Set up at LP1	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M 1600 A	CURRENT=MEDIUM; BUFFER-TIME=196; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=LP1			125 Secs (125 Secs) *[==>]*	***[1]***
	Comments: Short exposure to set aperture to LP1, which is near the center of the aperture range used in this program. It also sets the HV to the LP1 values.								
2	Adjust HV to LP4 values	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR ELHVADJPROP; QASISTATES COS FUV HVNOM HVNOM; QESIPARM ENDC TSA 173; QESIPARM ENDC TSB 169; QESIPARM SEGMENT AB		39 Secs (39 Secs) *[==>]*	***[1]***
	Comments: Adjust the HV to LP4 values. *Since the HV is not increasing, exposure time = 39 seconds*								
3	Aperture Adjustment 1 for Segment A	NONE	COS, ALIGN/APER		XAPER=121			0.0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: Put the aperture in the appropriate position to illuminate a portion of the LP3 region of the detector when illuminating Segment A with G130M/1309. *FCA LAPXSTP value at LP1 is -153* *Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 1 for LP4 is -32* *Therefore, XAPER is set to -32 - -153 = +121*								
4	G130M/1309 Deuterium Exposure 1	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M 1309 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=LP1			440 Secs (440 Secs) *[==>]*	***[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.								
5	Aperture Adjustment 2 for Segment A	NONE	COS, ALIGN/APER		XAPER=67	QESIPARM XSTEPS -54		0.0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: Put the aperture in the appropriate position to illuminate a portion of the LP3 region of the detector when illuminating Segment A with G130M/1309. *FCA LAPXSTP value at LP1 is -153* *Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 2 for LP4 is -86* *Therefore, XAPER is set to -86 - -153 = +67. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS -54" [(+67 - +121) = -54] Special Requirement is necessary to move the aperture to the correct location.*								

6	G130M/1309 Deuterium Exposure 2	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M 1309 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=LP1		440 Secs (440 Secs) *[==>]*	***[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.

7	Aperture Adjustment 1 for Segment B	NONE	COS, ALIGN/APER		XAPER=112	QESIPARM XSTEPS 45	0.0 Secs (0 Secs) *[==>]*	***[1]***

Comments: Put the aperture in the appropriate position to illuminate a portion of the LP3 region of the detector when illuminating Segment B with G160M/1600.

FCA LAPXSTP value at LP1 is -153
Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at Position 1 for LP4 is -41

*Therefore, XAPER is set to -41 - -153 = +112. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS 45" [(+112 - +67) = +45] Special Requirement is necessary to move the aperture to the correct location.*

8	G160M/1600 Deuterium Exposure 1	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M 1600 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=4; SEGMENT=BOTH; LIFETIME-POS=LP1		440 Secs (440 Secs) *[==>]*	***[1]***

Comments: Deuterium exposure optimmized for Segment B. FP-POS=4 was chosen because previous observations show that it has slightly more counts than the other FP-POS values.

9	Aperture Adjustment 2 for Segment B	NONE	COS, ALIGN/APER		XAPER=58	QESIPARM XSTEPS -54	0.0 Secs (0 Secs) *[==>]*	***[1]***

Comments: Put the aperture in the appropriate position to illuminate a portion of the LP3 region of the detector when illuminating Segment B with G160M/1600.

FCA LAPXSTP value at LP1 is -153
Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at Position 2 for LP3 is -95.

*Therefore, XAPER is set to -95 - -153 = +58. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS -54" [(+58 - +112) = -54] Special Requirement is necessary to move the aperture to the correct location.*

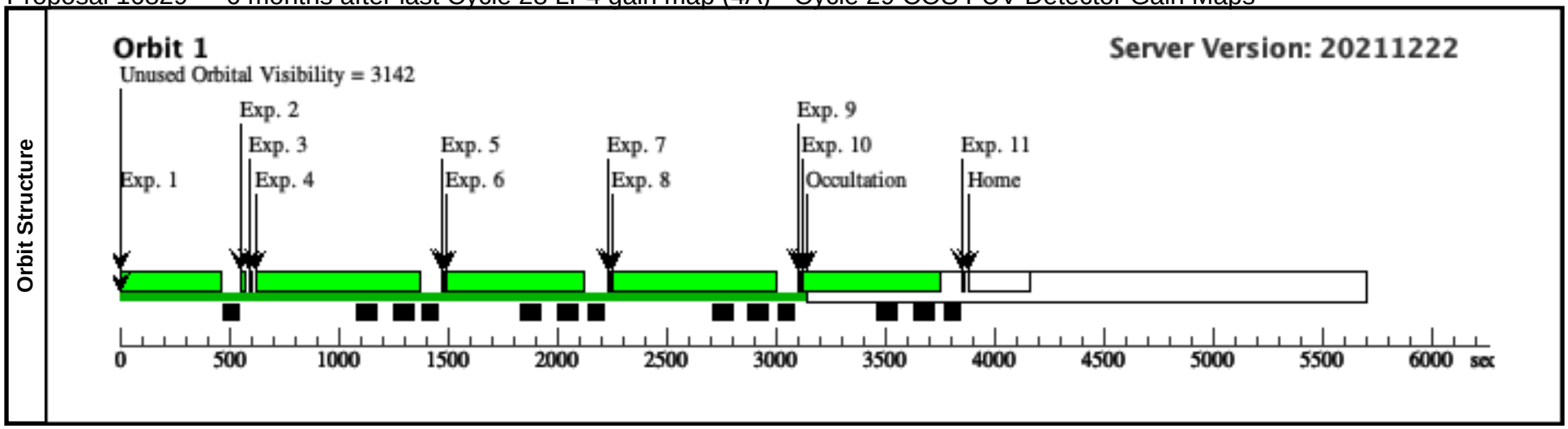
10	G160M/1600 Deuterium Exposure 2	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M 1600 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=4; SEGMENT=BOTH; LIFETIME-POS=LP1		440 Secs (440 Secs) *[==>]*	***[1]***

Comments: Deuterium exposure optimmized for Segment B. FP-POS=4 was chosen because previous observations show that it has slightly more counts than the other FP-POS values.

11	Return Aperture to Nominal Position	NONE	COS, ALIGN/APER		XAPER=0	QESIPARM XSTEPS -58	0 Secs (0 Secs) *[==>]*	***[1]***

Comments: Return aperture to nominal position by setting XAPER=0

**HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS -58" [(0 - 58) = -58] Special Requirement is necessary to move the aperture to its correct location.*


Orbit Structure
Orbit 1
Server Version: 20211222
Unused Orbital Visibility = 3142
Exp. 1
Exp. 2
Exp. 3
Exp. 4
Exp. 5
Exp. 6
Exp. 7
Exp. 8
Exp. 9
Exp. 10
Occultation
Exp. 11
Home
0
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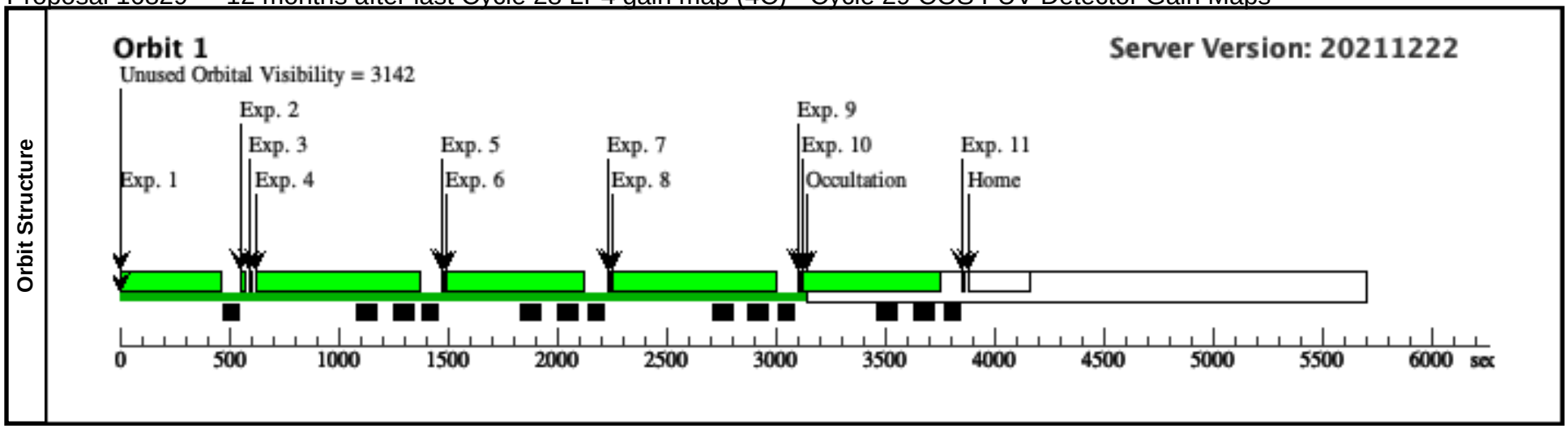
Proposal 16829 - ~12 months after last Cycle 28 LP4 gain map (4C) - Cycle 29 COS FUV Detector Gain Maps

Visit	**Proposal 16829, ~12 months after last Cycle 28 LP4 gain map (4C), scheduling** Sat May 21 11:00:32 GMT 2022 **Diagnostic Status: Warning** Scientific Instruments: S/C, COS, COS/FUV Special Requirements: BETWEEN 01-OCT-2022:00:00:00 AND 01-NOV-2022:00:00:00; PARALLEL *Comments: This visit collects data at LP4. It uses the HV values appropriate for LP4 (173/175).*
Diagnostics	(~12 months after last Cycle 28 LP4 gain map (4C)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	G160M/1600 Deuterium Exposure - Set up at LP1	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M 1600 A	CURRENT=MEDIUM; BUFFER-TIME=196; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=LP1			125 Secs (125 Secs) *[==>]*	***[1]***
	Comments: Short exposure to set aperture to LP1, which is near the center of the aperture range used in this program. It also sets the HV to the LP1 values.								
2	Adjust HV to LP4 values	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR ELHVADJPROP; QASISTATES COS FUV HVNOM HVNOM; QESIPARM ENDCTSA 173; QESIPARM ENDCTSB 175; QESIPARM SEGMENT AB		39 Secs (39 Secs) *[==>]*	***[1]***
	Comments: Adjust the HV to LP4 values. *Since the HV is not increasing, exposure time = 39 seconds*								
3	Aperture Adjustment 1 for Segment A	NONE	COS, ALIGN/APER		XAPER=121			0.0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: Put the aperture in the appropriate position to illuminate a portion of the LP4 region of the detector when illuminating Segment A with G130M/1309. *FCA LAPXSTP value at LP1 is -153* *Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 1 for LP4 is -32* *Therefore, XAPER is set to -32 - -153 = +121*								
4	G130M/1309 Deuterium Exposure 1	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M 1309 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=LP1			440 Secs (440 Secs) *[==>]*	***[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.								
5	Aperture Adjustment 2 for Segment A	NONE	COS, ALIGN/APER		XAPER=67	QESIPARM XSTEPS -54		0.0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: Put the aperture in the appropriate position to illuminate a portion of the LP4 region of the detector when illuminating Segment A with G130M/1309. *FCA LAPXSTP value at LP1 is -153* *Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 2 for LP4 is -86* *Therefore, XAPER is set to -86 - -153 = +67. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS -54" [(+67 - +121) = -54] Special Requirement is necessary to move the aperture to the correct location.*								

6	G130M/1309 Deuterium Exposure 2	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M 1309 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=LP1		440 Secs (440 Secs) *[==>]*	***[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.								
7	Aperture Adjustment 1 for Segment B	NONE	COS, ALIGN/APER		XAPER=112	QESIPARM XSTEP S 45	0.0 Secs (0 Secs) *[==>]*	***[1]***
Comments: Put the aperture in the appropriate position to illuminate a portion of the LP4 region of the detector when illuminating Segment B with G160M/1600. *FCA LAPXSTP value at LP1 is -153* *Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at Position 1 for LP4 is -41* *Therefore, XAPER is set to -41 - -153 = +112. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS 45" [(+112 - +67) = +45] Special Requirement is necessary to move the aperture to the correct location.*								
8	G160M/1600 Deuterium Exposure 1	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M 1600 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=4; SEGMENT=BOTH; LIFETIME-POS=LP1		440 Secs (440 Secs) *[==>]*	***[1]***
Comments: Deuterium exposure optimmized for Segment B. FP-POS=4 was chosen because previous observations show that it has slightly more counts than the other FP-POS values.								
9	Aperture Adjustment 2 for Segment B	NONE	COS, ALIGN/APER		XAPER=58	QESIPARM XSTEP S -54	0.0 Secs (0 Secs) *[==>]*	***[1]***
Comments: Put the aperture in the appropriate position to illuminate a portion of the LP4 region of the detector when illuminating Segment B with G160M/1600. *FCA LAPXSTP value at LP1 is -153* *Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at Position 2 for LP4 is -95.* *Therefore, XAPER is set to -95 - -153 = +58. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS -54" [(+58 - +112) = -54] Special Requirement is necessary to move the aperture to the correct location.*								
10	G160M/1600 Deuterium Exposure 2	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M 1600 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=4; SEGMENT=BOTH; LIFETIME-POS=LP1		440 Secs (440 Secs) *[==>]*	***[1]***
Comments: Deuterium exposure optimmized for Segment B. FP-POS=4 was chosen because previous observations show that it has slightly more counts than the other FP-POS values.								
11	Return Aperture to Nominal Position	NONE	COS, ALIGN/APER		XAPER=0	QESIPARM XSTEP S -58	0 Secs (0 Secs) *[==>]*	***[1]***
Comments: Return aperture to nominal position by setting XAPER=0 *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS -58" [(0 - 58) = -58] Special Requirement is necessary to move the aperture to its correct location.*								


Orbit Structure
Orbit 1
Server Version: 20211222
Unused Orbital Visibility = 3142
Exp. 1
Exp. 2
Exp. 3
Exp. 4
Exp. 5
Exp. 6
Exp. 7
Exp. 8
Exp. 9
Exp. 10
Occultation
Exp. 11
Home
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Proposal 16829 - ~6 months after iniital LP5 gain map (5A) - Cycle 29 COS FUV Detector Gain Maps

Visit	**Proposal 16829, ~6 months after iniital LP5 gain map (5A), completed** Sat May 21 11:00:32 GMT 2022 **Diagnostic Status: Warning** Scientific Instruments: S/C, COS, COS/FUV Special Requirements: BETWEEN 01-APR-2022:00:00:00 AND 01-MAY-2022:00:00:00; PARALLEL *Comments: This visit collects data at LP5. It uses the HV values appropriate for LP5 (167/169).*
Diagnostics	(~6 months after iniital LP5 gain map (5A)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	G160M/1600 Deuterium Exposure - Set up at LP1	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M 1600 A	CURRENT=MEDIUM; BUFFER-TIME=196; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=LP1			125 Secs (125 Secs) *[==>]*	***[1]***
	Comments: Short exposure to set aperture to LP1, which is near the center of the aperture range used in this program. It also sets the HV to the LP1 values.								
2	Adjust HV to LP5 values	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR ELHVADJPROP; QASISTATES COS FUV HVNOM HVNOM; QESIPARM ENDCTSA 167; QESIPARM ENDCTSB 169; QESIPARM SEGMENT AB		39 Secs (39 Secs) *[==>]*	***[1]***
	Comments: Adjust the HV to LP5 values. *Since the HV is not increasing, exposure time = 39 seconds*								
3	Aperture Adjustment 1 for Segment A	NONE	COS, ALIGN/APER		XAPER=-60			0.0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: Put the aperture in the appropriate position to illuminate a portion of the LP5 region of the detector when illuminating Segment A with G130M/1309. *FCA LAPXSTP value at LP1 is -153* *Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 1 for LP5 is -213* *Therefore, XAPER is set to -213 - -153 = -60*								
4	G130M/1309 Deuterium Exposure 1	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M 1309 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=LP1			440 Secs (440 Secs) *[==>]*	***[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.								
5	Aperture Adjustment 2 for Segment A	NONE	COS, ALIGN/APER		XAPER=-114	QESIPARM XSTEPS -54		0.0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: Put the aperture in the appropriate position to illuminate a portion of the LP5 region of the detector when illuminating Segment A with G130M/1309. *FCA LAPXSTP value at LP1 is -153* *Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 2 for LP5 is -267* *Therefore, XAPER is set to -267 - -153 = -114. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS -54" [(-114 - -60) = -54] Special Requirement is necessary to move the aperture to the correct location.*								

6	G130M/1309 Deuterium Exposure 2	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M 1309 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=LP1		440 Secs (440 Secs) *[==>]*	***[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.

7	Aperture Adjustment 1 for Segment B	NONE	COS, ALIGN/APER		XAPER=-72	QESIPARM XSTEPS 42	0.0 Secs (0 Secs) *[==>]*	***[1]***

Comments: Put the aperture in the appropriate position to illuminate a portion of the LP5 region of the detector when illuminating Segment B with G160M/1600.

FCA LAPXSTP value at LP1 is -153
Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at Position 1 for LP5 is -225

*Therefore, XAPER is set to -225 - -153 = -72. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS 42" [(-72 - -114) = +42] Special Requirement is necessary to move the aperture to the correct location.*

8	G160M/1600 Deuterium Exposure 1	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M 1600 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=4; SEGMENT=BOTH; LIFETIME-POS=LP1		440 Secs (440 Secs) *[==>]*	***[1]***

Comments: Deuterium exposure optimmized for Segment B. FP-POS=4 was chosen because previous observations show that it has slightly more counts than the other FP-POS values.

9	Aperture Adjustment 2 for Segment B	NONE	COS, ALIGN/APER		XAPER=-114	QESIPARM XSTEPS -42	0.0 Secs (0 Secs) *[==>]*	***[1]***

Comments: Put the aperture in the appropriate position to illuminate a portion of the LP5 region of the detector when illuminating Segment B with G160M/1600.

FCA LAPXSTP value at LP1 is -153
Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at Position 2 for LP5 is -280, but the aperture soft stop is at -275 and we don't want to exceed that value when including the 5 step overshoot. To leave some pad, I will set it to match the G130M exposure (-267).

*Therefore, XAPER is set to -267 - -153 = -114. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS -42" [(-114 - -72) = -42] Special Requirement is necessary to move the aperture to the correct location.*

10	G160M/1600 Deuterium Exposure 2	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M 1600 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=4; SEGMENT=BOTH; LIFETIME-POS=LP1		440 Secs (440 Secs) *[==>]*	***[1]***

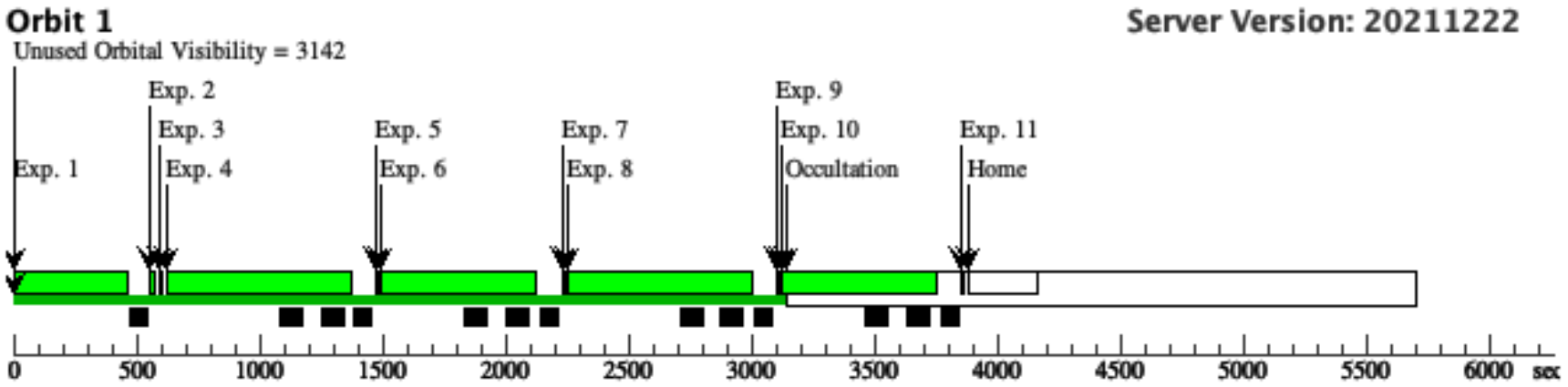
Comments: Deuterium exposure optimmized for Segment B. FP-POS=4 was chosen because previous observations show that it has slightly more counts than the other FP-POS values.

	11	Return Aperture to Nominal Position	NONE	COS, ALIGN/APER	XAPER=0	QESIPARM XSTEPS 114	0 Secs (0 Secs) *[==>]*	***[1]***

Comments: Return aperture to nominal position by setting XAPER=0

**HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS +114" [(0 - -114) = +114] Special Requirement is necessary to move the aperture to its correct location.*

Orbit Structure



Proposal 16829 - ~12 months after initial LP5 gain map (5C) - Cycle 29 COS FUV Detector Gain Maps

Visit	**Proposal 16829, ~12 months after initial LP5 gain map (5C), scheduling** Sat May 21 11:00:32 GMT 2022 **Diagnostic Status: Warning** Scientific Instruments: S/C, COS, COS/FUV Special Requirements: BETWEEN 01-OCT-2022:00:00:00 AND 01-NOV-2022:00:00:00; PARALLEL *Comments: This visit collects data at LP5. It uses the HV values appropriate for LP5 (167/169).*
Diagnostics	(~12 months after initial LP5 gain map (5C)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	G160M/1600 Deuterium Exposure - Set up at LP1	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M 1600 A	CURRENT=MEDIUM; BUFFER-TIME=196; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=LP1			125 Secs (125 Secs) *[==>]*	***[1]***
	Comments: Short exposure to set aperture to LP1, which is near the center of the aperture range used in this program. It also sets the HV to the LP1 values.								
2	Adjust HV to LP5 values	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR ELHVADJPROP; QASISTATES COS FUV HVNOM HVNOM; QESIPARM ENDCTSA 167; QESIPARM ENDCTSB 169; QESIPARM SEGMENT AB		39 Secs (39 Secs) *[==>]*	***[1]***
	Comments: Adjust the HV to the LP5 values. *Since the HV is not increasing, exposure time = 39 seconds*								
3	Aperture Adjustment 1 for Segment A	NONE	COS, ALIGN/APER		XAPER=-60			0.0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: Put the aperture in the appropriate position to illuminate a portion of the LP5 region of the detector when illuminating Segment A with G130M/1309. *FCA LAPXSTP value at LP1 is -153* *Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 1 for LP5 is -213* *Therefore, XAPER is set to -213 - -153 = -60*								
4	G130M/1309 Deuterium Exposure 1	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M 1309 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=LP1			440 Secs (440 Secs) *[==>]*	***[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.								
5	Aperture Adjustment 2 for Segment A	NONE	COS, ALIGN/APER		XAPER=-114	QESIPARM XSTEPS -54		0.0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: Put the aperture in the appropriate position to illuminate a portion of the LP5 region of the detector when illuminating Segment A with G130M/1309. *FCA LAPXSTP value at LP1 is -153* *Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 2 for LP5 is -267* *Therefore, XAPER is set to -267 - -153 = -114. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS -54" [(-114 - -60) = -54] Special Requirement is necessary to move the aperture to the correct location.*								

6	G130M/1309 Deuterium Exposure 2	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M 1309 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=LP1		440 Secs (440 Secs) *[==>]*	***[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.

7	Aperture Adjustment 1 for Segment B	NONE	COS, ALIGN/APER		XAPER=-72	QESIPARM XSTEP S 42	0.0 Secs (0 Secs) *[==>]*	***[1]***

Comments: Put the aperture in the appropriate position to illuminate a portion of the LP5 region of the detector when illuminating Segment B with G160M/1600.

FCA LAPXSTP value at LP1 is -153
Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at Position 1 for LP5 is -225

*Therefore, XAPER is set to -225 - -153 = -72. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS 42" [(-72 - -114) = +42] Special Requirement is necessary to move the aperture to the correct location.*

8	G160M/1600 Deuterium Exposure 1	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M 1600 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=4; SEGMENT=BOTH; LIFETIME-POS=LP1		440 Secs (440 Secs) *[==>]*	***[1]***

Comments: Deuterium exposure optimmized for Segment B. FP-POS=4 was chosen because previous observations show that it has slightly more counts than the other FP-POS values.

9	Aperture Adjustment 2 for Segment B	NONE	COS, ALIGN/APER		XAPER=-114	QESIPARM XSTEP S -42	0.0 Secs (0 Secs) *[==>]*	***[1]***

Comments: Put the aperture in the appropriate position to illuminate a portion of the LP5 region of the detector when illuminating Segment B with G160M/1600.

FCA LAPXSTP value at LP1 is -153
Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at Position 2 for LP5 is -280, but the aperture soft stop is at -275 and we don't want to exceed that value when including the 5 step overshoot. To leave some pad, I will set it to match the G130M exposure (-267).

*Therefore, XAPER is set to -267 - -153 = -114. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS -42" [(-114 - -72) = -42] Special Requirement is necessary to move the aperture to the correct location.*

10	G160M/1600 Deuterium Exposure 2	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M 1600 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=4; SEGMENT=BOTH; LIFETIME-POS=LP1		440 Secs (440 Secs) *[==>]*	***[1]***

Comments: Deuterium exposure optimmized for Segment B. FP-POS=4 was chosen because previous observations show that it has slightly more counts than the other FP-POS values.

	11	Return Aperture to Nominal Position	NONE	COS, ALIGN/APER	XAPER=0	QESIPARM XSTEPS 114	0 Secs (0 Secs) *[==>]*	 ***[1]***

Comments: Return aperture to nominal position by setting XAPER=0

**HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS +114" [(0 - -114) = +114] Special Requirement is necessary to move the aperture to its correct location.*

Orbit Structure