18207 - LP11 Gain Maps

Cycle: 33, 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	DEUTERIUM NONE	COS COS/FUV	1	11-Nov-2025 11:00:40.0	yes

1 Total Orbits Used

ABSTRACT

This program uses the deuterium lamp to illuminate the regions of the detector as far a possible below LP4 on the detector in order to obtain gain maps for LP11.

OBSERVING DESCRIPTION

This program will obtain spectra from the deuterium lamp below the LP4 detector location.

The program layout is based on that of the annual gain map program (e.g. 17851 for Cycle 32). The primary differences are that the aperture locations for G130M and G160M have been estimated based on previous vignetted deuterium exposures; and two different cenwaves have been used

for each grating in an attempt to have the illumination reach lower pixels.

The procedure for collecting this data is given below.

* Take an exposure at LP1 to set up the aperture position and HV.

* 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 with G130M/1309

* Take a 440 second deuterium lamp exposure using both detector segments with G130M/1327

* 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 with G160M/1600

* Take a 440 second deuterium lamp exposure using both detector segments with G160M/1533

* Return the aperture to the HOME position

All G130M exposures use FP-POS=1, and all G160M exposures use FP-POS=4

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

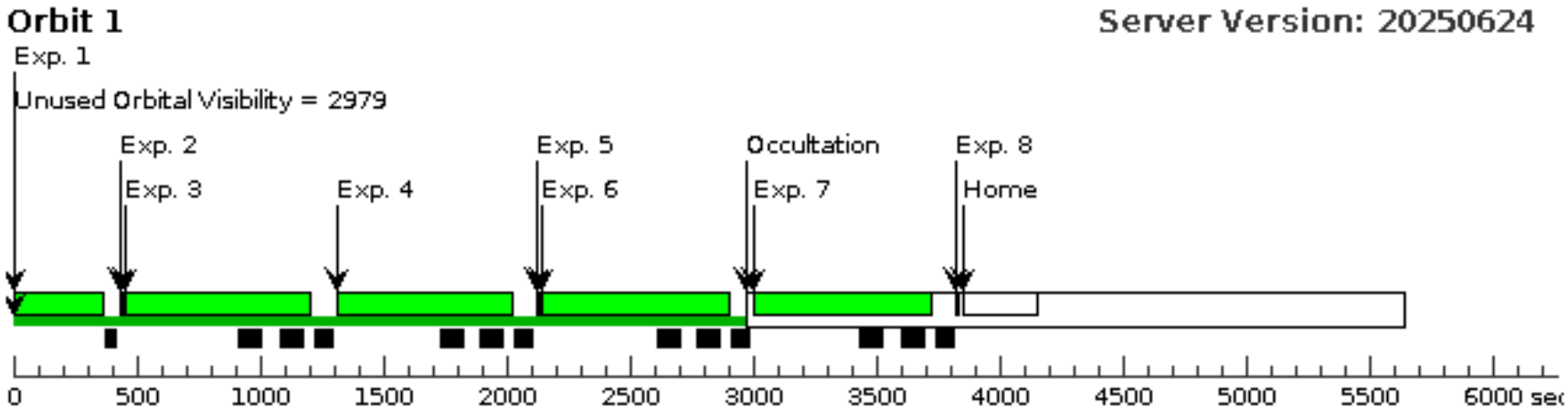
The initial exposure of each visit uses the FCA_LP1 aperture position, LAPXSTP = -153. Thus all XAPER values are relative to that position.

Proposal 18207 - LP11 gain map (01) - LP11 Gain Maps

Visit	**Proposal 18207, LP11 gain map (01), implementation** Tue Nov 11 16:00:40 GMT 2025 **Diagnostic Status: Warning** Scientific Instruments: COS, COS/FUV Special Requirements: PARALLEL *Comments: This visit collects gain map data below LP4. It uses the LP1 HV values (178/175).*
Diagnostics	(LP11 gain map (01)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB VISIT

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=4; SEGMENT=BOTH; LIFETIME-POS=LP1			50 Secs (50 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	Aperture Adjustment for G130M	NONE	COS, ALIGN/APER		XAPER=137			0.0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: Put the aperture in the appropriate position to illuminate a region near the bottom of the detector when illuminating Segment A with G130M. *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 -16* *Therefore, XAPER is set to -16 - -153 = +137*								
3	G130M/1309 Deuterium Exposure	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.								
4	G130M/1327 Deuterium Exposure	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M 1327 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 for G160M	NONE	COS, ALIGN/APER		XAPER=133	QESIPARM XSTEPS -4		0.0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: Put the aperture in the appropriate position to illuminate a region near the bottom of the detector when illuminating Segment B with G160M *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 -20 (was -41)* *Therefore, XAPER is set to -20 - -153 = +133. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS -4" [(+133 - +137) = -4] Special Requirement is necessary to move the aperture to the correct location.*								

6	G160M/1600 Deuterium Exposure	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 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.								
7	G160M/1533 Deuterium Exposure	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M 1533 A	CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=4; SEGMENT=BOTH; LIFETIME-POS=LP1		440 Secs (440 Secs) *[==>]*	***[1]***
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.								
8	Return Aperture to Nominal Position	NONE	COS, ALIGN/APER		XAPER=0	QESIPARM XSTEPS -133	0 Secs (0 Secs) *[==>]*	***[1]***
Comments: Return aperture to nominal position by setting XAPER=0								
**HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS -133" [(0 - 133) = -133] Special Requirement is necessary to move the aperture to its correct location.*								

Orbit Structure