# 17329 - Cycle 31 COS FUV Characterization of Modal Gain When Changing High Voltage

Cycle: 31, Proposal Category: CAL/COS

(Availability Mode: RESTRICTED)

**INVESTIGATORS**



| *Name* | *Institution* |
|---|---|
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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<br>DEUTERIUM<br>NONE | COS<br>COS/FUV<br>S/C | 1 | 26-Jan-2024 11:00:20.0 | yes |
| 2C | DARK<br>DEUTERIUM<br>NONE | COS<br>COS/FUV<br>S/C | 1 | 26-Jan-2024 11:00:21.0 | yes |
| 3A | DARK<br>DEUTERIUM<br>NONE | COS<br>COS/FUV<br>S/C | 1 | 26-Jan-2024 11:00:23.0 | yes |

| *Visit* | *Targets used in Visit* | *Configurations used in Visit* | *Orbits Used* | *Last Orbit Planner Run* | *OP Current with Visit?* |
|---|---|---|---|---|---|
| 3C | DARK<br>DEUTERIUM<br>NONE | COS<br>COS/FUV<br>S/C | 1 | 26-Jan-2024 11:00:24.0 | yes |
| 4A | DARK<br>DEUTERIUM<br>NONE | COS<br>COS/FUV<br>S/C | 1 | 26-Jan-2024 11:00:25.0 | yes |
| 4C | DARK<br>DEUTERIUM<br>NONE | COS<br>COS/FUV<br>S/C | 1 | 26-Jan-2024 11:00:26.0 | yes |
| 5A | DARK<br>DEUTERIUM<br>NONE | COS<br>COS/FUV<br>S/C | 1 | 26-Jan-2024 11:00:27.0 | yes |
| 5C | DARK<br>DEUTERIUM<br>NONE | COS<br>COS/FUV<br>S/C | 1 | 26-Jan-2024 11:00:28.0 | 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 31. 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 both before and after any change is made to any nominal high voltage value on either segment, and before and after any lifetime move. 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 before and after any high voltage change, and before and after any change in Lifetime Position. They should be obtained at the appropriate HV levels and detector locations.

The plan for Cycle 31 includes 2 one-orbit contingency visits for each HV change. These two visits will be used if a HV change is made during the cycle. One will be taken immediately before the change using the current HV values (visits 2A, 3A, 4A, or 5A), and one will be taken after at the new values (visits 2C, 3C, 4C, or 5C).

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 | HV |
|---|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| 2A/2C | 2 | G130M/A | 1 | -213 | -60 | 173/175 |
| 2A/2C | 2 | G130M/A | 2 | -267* | -114 | 173/175 |
| 2A/2C | 2 | G160M/B | 1 | -215 | -62 | 173/175 |
| 2A/2C | 2 | G160M/B | 2 | -267* | -114 | 173/175 |
| 3A/3C | 3 | G130M/A | 1 | -72 | +81 | 173/175 |
| 3A/3C | 3 | G130M/A | 2 | -128 | +25 | 173/175 |
| 3A/3C | 3 | G160M/B | 1 | -84 | +69 | 173/175 |
| 3A/3C | 3 | G160M/B | 2 | -140 | +13 | 173/175 |
| 4A/4C | 4 | G130M/A | 1 | -32 | +121 | 173/175 |
| 4A/4C | 4 | G130M/A | 2 | -86 | +67 | 173/175 |
| 4A/4C | 4 | G160M/B | 1 | -41 | +112 | 173/175 |
| 4A/4C | 4 | G160M/B | 2 | -95 | +58 | 173/175 |
| 5A/5C | 5 | G130M/A | 1 | -213 | -60 | 167/169 |
| 5A/5C | 5 | G130M/A | 2 | -267* | -114 | 167/169 |
| 5A/5C | 5 | G160M/B | 1 | -215 | -62 | 167/169 |
| 5A/5C | 5 | G160M/B | 2 | -267* | -114 | 167/169 |

* 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. The LP6 positions are also the same, and since the LP5 and LP6 HV values are identical, no separate LP6 visits have been created.

Note that the HVs in the table above are the current HV values. They should be modified to reflect the HV adjustments being made. In addition, any HV changes may require a change to the regular gain map program (PID 17325).

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11/15/23

Visits 5A and 5C will be executed as part of the LP5/LP6 HV change on 12/11/23. The HV values for 5C have been updated to 173/175, and the On Hold has been removed from both visits.

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12/7/23

Removed the BETWEEN for visits 5A and 5C in order to allow scheduling after COS observations are started again.

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|---|---|
| **Visit** | **Proposal 17329, LP2 gain map - before HV increase (2A), implementation** Fri Jan 26 16:00:29 GMT 2024<br>**Diagnostic Status: Warning**<br>Scientific Instruments: S/C, COS, COS/FUV<br>Special Requirements: ON HOLD ; PARALLEL<br>*Comments: This visit collects data at LP2. It uses the HV values appropriate for LP2 (173/175).*<br>*On Hold Comments: Only needed if HV changed during Cycle 31*<br>*HV Values will have to be updated before execution!* |
| **Diagnostics** | (LP2 gain map - before HV increase (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.*<br><br>*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.*<br><br>*FCA LAPXSTP value at LP1 is -153*<br>*Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 1 for LP2 is -213*<br><br>*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.*<br><br>*FCA LAPXSTP value at LP1 is -153*<br>*Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 2 for LP2 is -267*<br><br>*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)<br>*[==>]* | ***[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=-62 | QESIPARM XSTEPS 52 | 0.0 Secs (0 Secs)<br>*[==>]* | ***[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 -215*

*Therefore, XAPER is set to -215 - -153 = -62. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS 52" [(-62 - -114) = +52] 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)<br>*[==>]* | ***[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 -52 | 0.0 Secs (0 Secs)<br>*[==>]* | ***[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 -52" [(-114 - -62) = -52] 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)<br>*[==>]* | ***[1]*** |

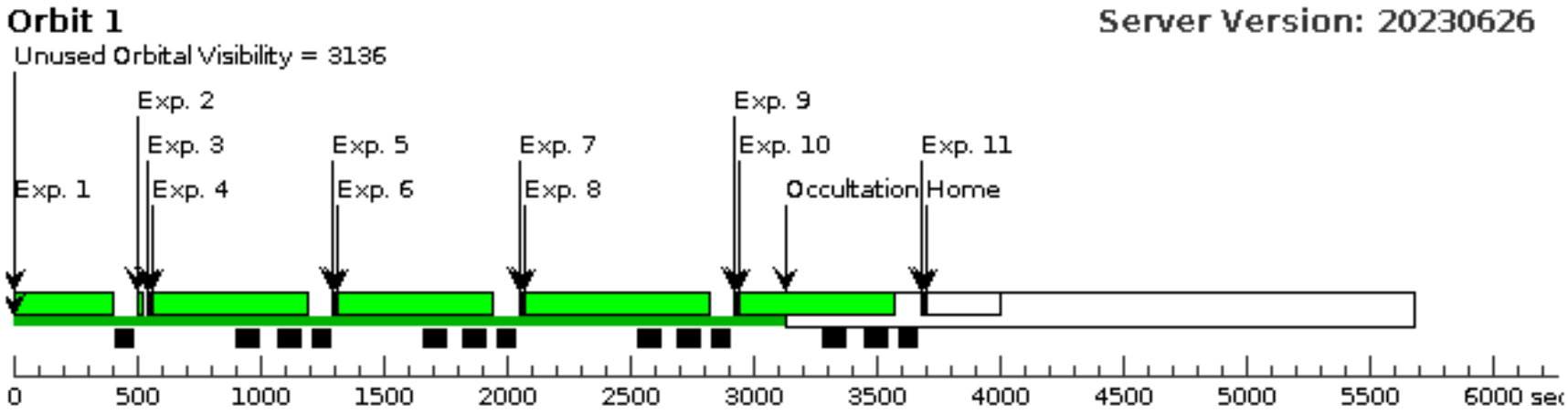
*Comments: Deuterium exposure optimmized for Segment B. FP-POS=4 was chosen because previous observations show that it has slightly more counts than the other FP-POS values.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 11 | Return Aperture to Nominal Position | NONE | COS, ALIGN/APER | XAPER=0 | QESIPARM XSTEPS 114 | 0 Secs (0 Secs)<br>*[==>]* | *[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 17329, LP2 gain map - after HV increase (2C), implementation** Fri Jan 26 16:00:29 GMT 2024<br>**Diagnostic Status: Warning**<br>Scientific Instruments: S/C, COS, COS/FUV<br>Special Requirements: ON HOLD ; PARALLEL<br>*Comments: This visit collects data at LP2. It uses the HV values appropriate for LP2 (173/175).*<br>*On Hold Comments: Only needed if HV changed during Cycle 31*<br>*HV Values will have to be updated before execution!* |
| **Diagnostics** | (LP2 gain map - after HV increase (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)<br>*[==>]* | ***[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)<br>*[==>]* | ***[1]*** |
| | *Comments: Adjust the HV to the LP2 values.*<br><br>*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)<br>*[==>]* | ***[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.*<br><br>*FCA LAPXSTP value at LP1 is -153*<br>*Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 1 for LP2 is -213*<br><br>*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)<br>*[==>]* | ***[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)<br>*[==>]* | ***[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.*<br><br>*FCA LAPXSTP value at LP1 is -153*<br>*Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 2 for LP2 is -267*<br><br>*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)<br>*[==>]* | ***[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=-62 | QESIPARM XSTEPS 52 | 0.0 Secs (0 Secs)<br>*[==>]* | ***[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 -215*

*Therefore, XAPER is set to -215 - -153 = -62. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS 52" [(-62 - -114) = +52] 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)<br>*[==>]* | ***[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 -52 | 0.0 Secs (0 Secs)<br>*[==>]* | ***[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 -52" [(-114 - -62) = -52] 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)<br>*[==>]* | ***[1]*** |

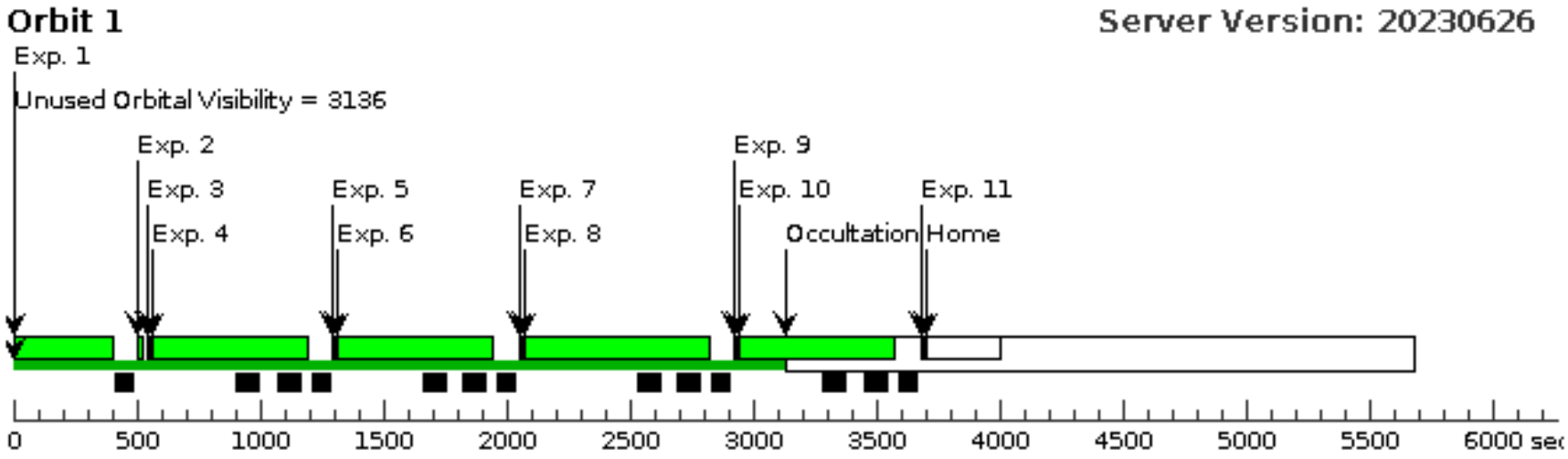
*Comments: Deuterium exposure optimmized for Segment B. FP-POS=4 was chosen because previous observations show that it has slightly more counts than the other FP-POS values.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 11 | Return Aperture to Nominal Position | NONE | COS, ALIGN/APER | XAPER=0 | QESIPARM XSTEPS 114 | 0 Secs (0 Secs)<br>*[==>]* | *[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 17329, LP3 gain map - before HV increase (3A), implementation** Fri Jan 26 16:00:29 GMT 2024<br>**Diagnostic Status: Warning**<br>Scientific Instruments: S/C, COS, COS/FUV<br>Special Requirements: ON HOLD ; PARALLEL<br>*Comments: This visit collects data at LP3. It uses the HV values appropriate for LP3 (173/175).*<br>*On Hold Comments: Only needed if HV changed during Cycle 31*<br>*HV Values will have to be updated before execution!* |
| **Diagnostics** | (LP3 gain map - before HV increase (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.*<br><br>*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.*<br><br>*FCA LAPXSTP value at LP1 is -153*<br>*Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 1 for LP3 is -72*<br><br>*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.*<br><br>*FCA LAPXSTP value at LP1 is -153*<br>*Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 2 for LP3 is -128*<br><br>*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)<br>*[==>]* | ***[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.*

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

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|---|---|---|---|---|---|---|---|---|
| 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)<br>*[==>]* | ***[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)<br>*[==>]* | ***[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.*

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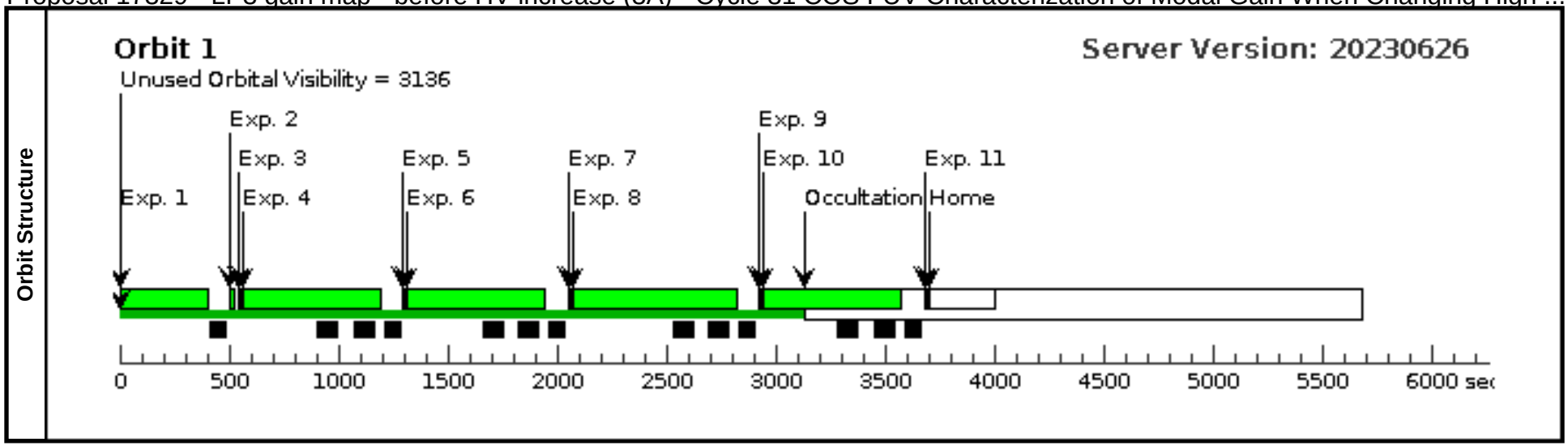
|---|---|---|---|---|---|---|---|---|
| 10 | G160M/1600 Deuterium Exposure 2 | DEUTERIUM | COS/FUV, TIME-TAG, FCA | G160M 1600 A | CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=4; SEGMENT=BOTH; LIFETIME-POS=LP1 | | 440 Secs (440 Secs)<br>*[==>]* | ***[1]*** |

*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)<br>*[==>]* | ***[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.*

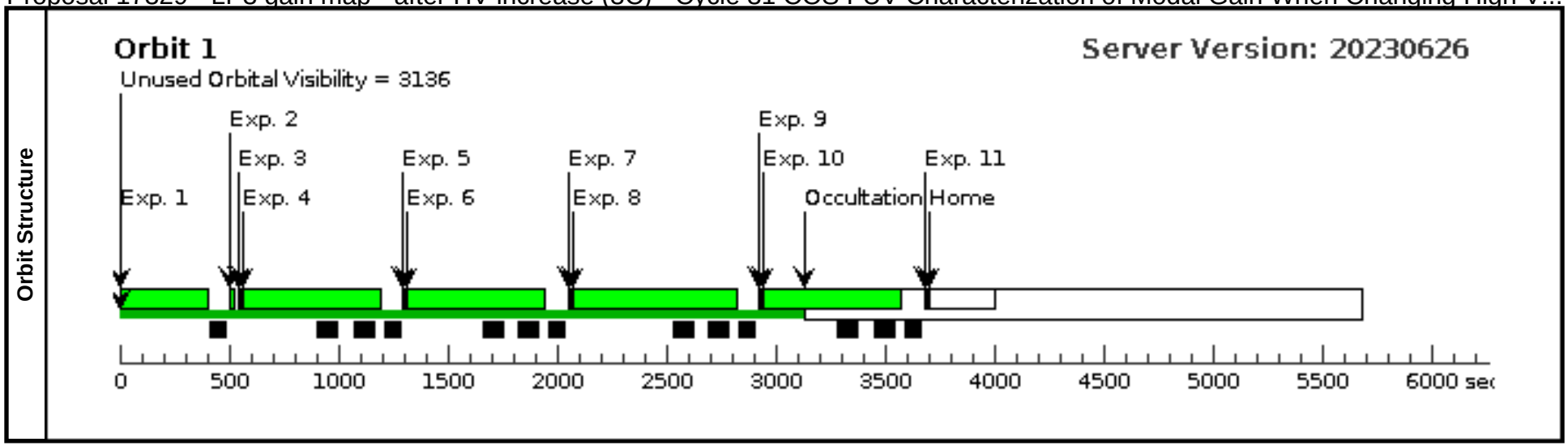

Orbit Structure
Orbit 1
Server Version: 20230626
Unused Orbital Visibility = 3136
Exp. 1
Exp. 2
Exp. 3
Exp. 4
Exp. 5
Exp. 6
Exp. 7
Exp. 8
Exp. 9
Exp. 10
Occultation
Exp. 11
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000 sec

| | |
|---|---|
| **Visit** | **Proposal 17329, LP3 gain map - after HV increase (3C), implementation** Fri Jan 26 16:00:29 GMT 2024<br>**Diagnostic Status: Warning**<br>Scientific Instruments: S/C, COS, COS/FUV<br>Special Requirements: ON HOLD ; PARALLEL<br>*Comments: This visit collects data at LP3. It uses the HV values appropriate for LP3 (173/175).*<br>*On Hold Comments: Only needed if HV changed during Cycle 31*<br>*HV Values will have to be updated before execution!* |
| **Diagnostics** | (LP3 gain map - after HV increase (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.*<br><br>*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.*<br><br>*FCA LAPXSTP value at LP1 is -153*<br>*Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 1 for LP3 is -72*<br><br>*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.*<br><br>*FCA LAPXSTP value at LP1 is -153*<br>*Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 2 for LP3 is -128*<br><br>*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)<br>*[==>]* | ***[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)<br>*[==>]* | ***[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.*<br><br>*FCA LAPXSTP value at LP1 is -153*<br>*Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at Position 1 for LP3 is -84*<br><br>*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)<br>*[==>]* | ***[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)<br>*[==>]* | ***[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.*<br><br>*FCA LAPXSTP value at LP1 is -153*<br>*Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at Position 2 for LP3 is -140.*<br><br>*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)<br>*[==>]* | ***[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)<br>*[==>]* | ***[1]*** |
| *Comments: Return aperture to nominal position by setting XAPER=0*<br><br>*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.* | | | | | | | | |

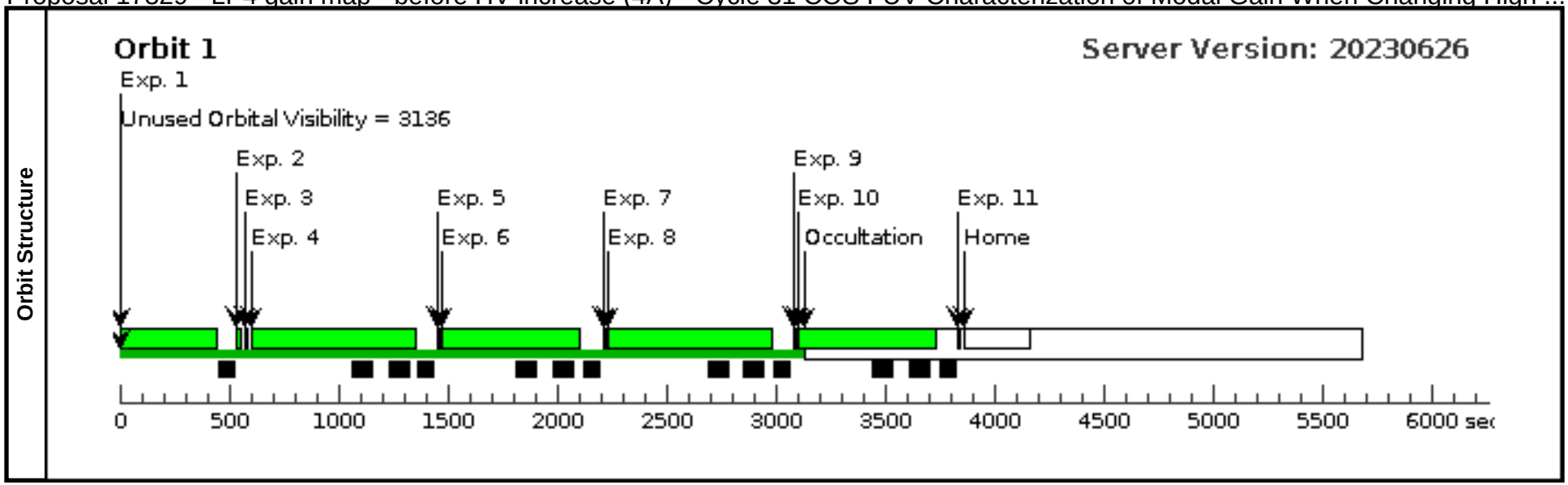

Orbit Structure
Orbit 1
Server Version: 20230626
Unused Orbital Visibility = 3136
Exp. 1
Exp. 2
Exp. 3
Exp. 4
Exp. 5
Exp. 6
Exp. 7
Exp. 8
Exp. 9
Exp. 10
Occultation
Exp. 11
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000 sec

| | |
|---|---|
| **Visit** | **Proposal 17329, LP4 gain map - before HV increase (4A), implementation** Fri Jan 26 16:00:29 GMT 2024<br>**Diagnostic Status: Warning**<br>Scientific Instruments: S/C, COS, COS/FUV<br>Special Requirements: ON HOLD ; PARALLEL<br>*Comments: This visit collects data at LP4. It uses the HV values appropriate for LP4 (173/175).*<br>*On Hold Comments: Only needed if HV changed during Cycle 31*<br>*HV Values will have to be updated before execution!* |
| **Diagnostics** | (LP4 gain map - before HV increase (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=4; 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.*<br><br>*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.*<br><br>*FCA LAPXSTP value at LP1 is -153*<br>*Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 1 for LP4 is -32*<br><br>*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.*<br><br>*FCA LAPXSTP value at LP1 is -153*<br>*Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 2 for LP4 is -86*<br><br>*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)<br>*[==>]* | ***[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)<br>*[==>]* | ***[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.*<br><br>*FCA LAPXSTP value at LP1 is -153*<br>*Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at Position 1 for LP4 is -41*<br><br>*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)<br>*[==>]* | ***[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)<br>*[==>]* | ***[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.*<br><br>*FCA LAPXSTP value at LP1 is -153*<br>*Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at Position 2 for LP3 is -95.*<br><br>*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)<br>*[==>]* | ***[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)<br>*[==>]* | ***[1]*** |
| *Comments: Return aperture to nominal position by setting XAPER=0*<br><br>*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: 20230626
Exp. 1
Unused Orbital Visibility = 3136
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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|---|---|
| **Visit** | **Proposal 17329, LP4 gain map - after HV increase (4C), implementation** Fri Jan 26 16:00:29 GMT 2024<br>**Diagnostic Status: Warning**<br>Scientific Instruments: S/C, COS, COS/FUV<br>Special Requirements: ON HOLD ; PARALLEL<br>*Comments: This visit collects data at LP4. It uses the HV values appropriate for LP4 (173/175).*<br>*On Hold Comments: Only needed if HV changed during Cycle 31*<br>*HV Values will have to be updated before execution!* |
| **Diagnostics** | (LP4 gain map - after HV increase (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=4; 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.*<br><br>*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.*<br><br>*FCA LAPXSTP value at LP1 is -153*<br>*Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 1 for LP4 is -32*<br><br>*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.*<br><br>*FCA LAPXSTP value at LP1 is -153*<br>*Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 2 for LP4 is -86*<br><br>*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.* | | | | | | | | |

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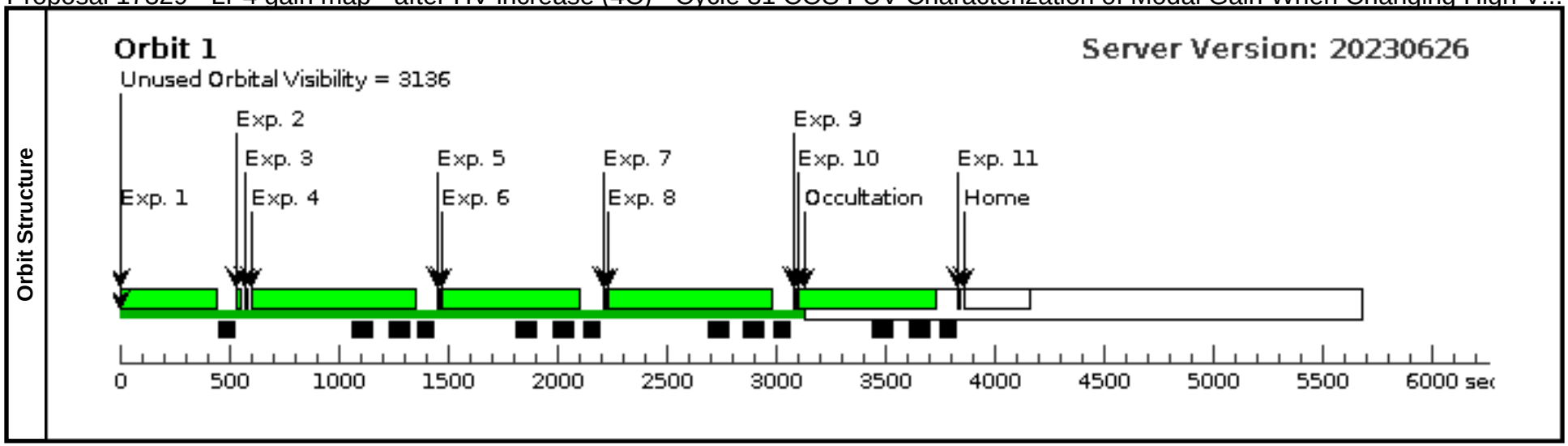
|---|---|---|---|---|---|---|---|---|
| 6 | G130M/1309 Deuterium Exposure 2 | DEUTERIUM | COS/FUV, TIME-TAG, FCA | G130M 1309 A | CURRENT=MEDIUM; BUFFER-TIME=165; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=LP1 | | 440 Secs (440 Secs)<br>*[==>]* | ***[1]*** |
| *Comments: Deuterium exposure optimized for Segment 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)<br>*[==>]* | ***[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.*<br><br>*FCA LAPXSTP value at LP1 is -153*<br>*Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at Position 1 for LP4 is -41*<br><br>*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)<br>*[==>]* | ***[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)<br>*[==>]* | ***[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.*<br><br>*FCA LAPXSTP value at LP1 is -153*<br>*Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at Position 2 for LP4 is -95.*<br><br>*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)<br>*[==>]* | ***[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)<br>*[==>]* | ***[1]*** |
| *Comments: Return aperture to nominal position by setting XAPER=0*<br><br>*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: 20230626
Unused Orbital Visibility = 3136
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
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000 sec

| | |
|---|---|
| **Visit** | **Proposal 17329, LP5 gain map - before HV increase (5A), completed** Fri Jan 26 16:00:29 GMT 2024<br>**Diagnostic Status: Warning**<br>Scientific Instruments: S/C, COS, COS/FUV<br>Special Requirements: PARALLEL<br>*Comments: This visit collects data at LP5. It uses the HV values appropriate for LP5 (167/169).* |
| **Diagnostics** | (LP5 gain map - before HV increase (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=4; 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 ENDC TSA 167; QESIPARM ENDC TSB 169; QESIPARM SEGMENT AB | | 39 Secs (39 Secs) *[==>]* | ***[1]*** |
| | *Comments: Adjust the HV to LP5 values.*<br><br>*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.*<br><br>*FCA LAPXSTP value at LP1 is -153*<br>*Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 1 for LP5 is -213*<br><br>*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.*<br><br>*FCA LAPXSTP value at LP1 is -153*<br>*Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 2 for LP5 is -267*<br><br>*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)<br>*[==>]* | ***[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=-62 | QESIPARM XSTEP S 52 | 0.0 Secs (0 Secs)<br>*[==>]* | ***[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 -215*

*Therefore, XAPER is set to -215 - -153 = -62. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS 52" [(-62 - -114) = +52] 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)<br>*[==>]* | ***[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 -52 | 0.0 Secs (0 Secs)<br>*[==>]* | ***[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 -52" [(-114 - -62) = -52] 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)<br>*[==>]* | ***[1]*** |

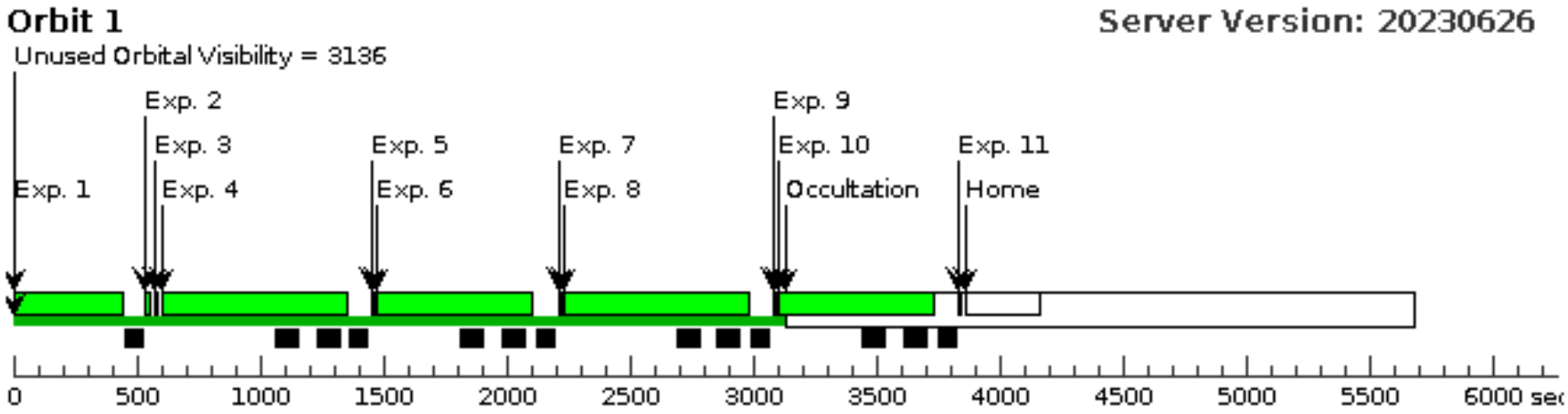
*Comments: Deuterium exposure optimmized for Segment B. FP-POS=4 was chosen because previous observations show that it has slightly more counts than the other FP-POS values.*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 11 | Return Aperture to Nominal Position | NONE | COS, ALIGN/APER | XAPER=0 | QESIPARM XSTEPS 114 | 0 Secs (0 Secs)<br>*[==>]* | *[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 17329, LP5 gain map - after HV increase (5C), completed** Fri Jan 26 16:00:29 GMT 2024<br>**Diagnostic Status: Warning**<br>Scientific Instruments: S/C, COS, COS/FUV<br>Special Requirements: PARALLEL<br>*Comments: This visit collects data at LP5. It uses the HV values appropriate for LP5 after the update on 12/11/23 (173/175).* |
| **Diagnostics** | (LP5 gain map - after HV increase (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=4; 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 173; QESIPARM ENDCTSB 175; QESIPARM SEGMENT AB | | 39 Secs (39 Secs) *[==>]* | ***[1]*** |
| | *Comments: Adjust the HV to LP5 values.*<br><br>*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.*<br><br>*FCA LAPXSTP value at LP1 is -153*<br>*Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 1 for LP5 is -213*<br><br>*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.*<br><br>*FCA LAPXSTP value at LP1 is -153*<br>*Desired LAPXSTP value for FCA to illuminate Segment A with G130M/1309 at Position 2 for LP5 is -267*<br><br>*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)<br>*[==>]* | ***[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=-62 | QESIPARM XSTEP S 52 | 0.0 Secs (0 Secs)<br>*[==>]* | ***[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 -215*

*Therefore, XAPER is set to -215 - -153 = -62. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS 52" [(-62 - -114) = +52] 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)<br>*[==>]* | ***[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 -52 | 0.0 Secs (0 Secs)<br>*[==>]* | ***[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 -52" [(-114 - -62) = -52] 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)<br>*[==>]* | ***[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)<br>*[==>]* | *[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**