# 14527 - FUV Focus Sweep Exploratory Program for COS at LP4

Cycle: 23, Proposal Category: CAL/COS

(Availability Mode: RESTRICTED)

## INVESTIGATORS

| Name | Institution | E-Mail |
|------|-------------|--------|
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## VISITS

| Visit | Targets used in Visit | Configurations used in Visit | Orbits Used | Last Orbit Planner Run | OP Current with Visit? |
|-------|----------------------|------------------------------|-------------|------------------------|------------------------|
| 01 | (1) V-KL-UMA<br>DARK<br>NONE | COS<br>COS/FUV<br>COS/NUV<br>S/C | 3 | 29-Jul-2016 13:44:51.0 | yes |
| 02 | (1) V-KL-UMA<br>NONE | COS<br>COS/FUV<br>COS/NUV | 1 | 29-Jul-2016 13:44:56.0 | yes |

4 Total Orbits Used

## ABSTRACT

This program will verify the impact of focus position on the spectral resolution at LP4. This will be achieved using focus sweeps with the G130M/1309 and G130M/1222 settings. Ray trace models predict that the best G130M/1309 focus at LP4 is within 30 focus steps of the current focus position at LP3. The G130M/1309 sweep will scan at 200 focus step increments from -800 to +1000 from the current LP3 focus, a strategy designed to ensure a spectral resolution degradation (compared to optimal focus) of <1%. This focus sweep strategy is based on the LENA2 program at LP2 (ID 13635), which executed successfully. A very similar strategy is used for G130M/1222.

The observations contain a scheduling constraint: both visits requested before July 24 2016.

**OBSERVING DESCRIPTION**

This program performs a focus sweep at LP4 with G130M/1309 (FUVA and FUVB; Visit 01) and G130M/1222 (FUVB only; Visit 02). LP4 is located at -5.0" in the XD direction relative to LP1. In each visit, initialization exposures are included after the ACQ/IMAGE to set up the correct instrument mode for the focus sweep.

Since the keyword LIFETIME-POS=LP4 will not exist in the flight software until September 2016 (after this program executes), the aperture has to be manually moved by -2.5" (the offset from LP3 to LP4) using an aperture-placement command (XAPER) after the ACQ/IMAGE and instrument initialization. Since 21 XAPER STEPS is 1", -2.5" (the offset from LP3 to LP4) is commanded by XAPER=+52.5, rounded to +53 since it must be an integer. Note that a negative offset in y corresponds to a positive XAPER.

Each subsequent exposure in the focus sweep is given a POSTARG of -2.5", to match the position of the aperture.

For G130M/1309, the FUVA and FUVB exposures must be done consecutively (not simultaneously) for health and safety (bright object) reasons.

For G130M/1222, the sweep uses FUVB only.

The program uses special commanding to set the high voltage for the G130M/1309 sweep (V01, exposure 01.024) to the level FUVB=163. The commands use the QASISTATES and QESIPARMS keywords under the "Engineering Requirements". The voltage is returned to the nominal levels at the end of the visit (FUVB=169). No voltage changes are used in the G130M/1222 sweep (Visit 02) since this is designed to execute at the nominal voltage level.

| Visit | | |
|---|---|---|
| | **Proposal 14527, G130M_1309_focus (01), implementation** | Fri Jul 29 17:44:57 GMT 2016 |
| | **Diagnostic Status: Warning** | |
| | Scientific Instruments: COS, S/C, COS/FUV, COS/NUV | |
| | Special Requirements: SCHED 90%; BEFORE 24-JUL-2016:00:00:00 | |

**Diagnostics**

(G130M_1309_focus (01)) Warning (Form): For the best data quality, it is strongly recommended that all four FP-POS positions be used when observing at a given COS CENWAVE setting.

(G130M_1309_focus (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(G130M_1309_focus (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE NO ORIENT

**Fixed Targets**

| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (1) | V-KL-UMA | RA: 11 47 14.4900 (176.8103750d) | Proper Motion RA: 0.00333 sec of time/yr | V=13.28 | Reference Frame: ICRS |
| | Alt Name1: FEIGE48 | Dec: +61 15 31.80 (61.25883d) | Proper Motion Dec: 0 | | |
| | | Equinox: J2000 | Epoch of Position: 2000 | | |

*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Extended=NO*

| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ACQ/IMAGE (COS.ta.607556) | (1) V-KL-UMA | COS/NUV, ACQ/IMAGE, BOA | MIRRORA | | | | 16 Secs (16 Secs) [==>] | [1] |
| | Comments: S/N=60 | | | | | | | | |
| 2 | Initialize G130M/1309 at nominal aperture and focus position (COS.sp.606970) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1309 A | FP-POS=3; BUFFER-TIME=110; WAVECAL=NO; FLASH=NO; SEGMENT=A | | | 0.1 Secs (0.1 Secs) [==>] | [1] |
| | Comments: This exposure sets the correct instrument configuration before the aperture is moved and the voltage is set. Note from Alan Welty: This sets the HV to 167/100 (Seg A only) | | | | | | | | |
| 3 | Place aperture at -5.0 arc sec in XD | NONE | COS, ALIGN/APER | | XAPER=53; YAPER=0.0 | | | 0.0 Secs (0 Secs) [==>] | [1] |
| | Comments: Assumes 21 motor steps per " in XAPER. This command moves the PSA from -2.5" (LP3) to -5.0" (LP4). | | | | | | | | |
| 4 | Move to -800 | NONE | COS, ALIGN/OSM | | FOCUS=-800 | | | 0 Secs (0 Secs) [==>] | [1] |
| 5 | 1309_A_f-800 (COS.sp.606970) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1309 A | FP-POS=3; SEGMENT=A; BUFFER-TIME=100 | POS TARG 0.0,-2.5 | | 200.0 Secs (200 Secs) [==>] | [1] |
| 6 | Move to -600 | NONE | COS, ALIGN/OSM | | FOCUS=-600 | | | 0 Secs (0 Secs) [==>] | [1] |
| 7 | 1309_A_f-600 (COS.sp.606970) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1309 A | FP-POS=3; SEGMENT=A; BUFFER-TIME=100 | SAME POS AS 5 | | 200 Secs (200 Secs) [==>] | [1] |
| 8 | Move to -400 | NONE | COS, ALIGN/OSM | | FOCUS=-400 | | | 0 Secs (0 Secs) [==>] | [1] |
| 9 | 1309_A_f-400 (COS.sp.606970) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1309 A | FP-POS=3; SEGMENT=A; BUFFER-TIME=100 | SAME POS AS 5 | | 200 Secs (200 Secs) [==>] | [1] |
| 10 | Move to -200 | NONE | COS, ALIGN/OSM | | FOCUS=-200 | | | 0 Secs (0 Secs) [==>] | [1] |
| 11 | 1309_A_f-200 (COS.sp.606970) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1309 A | FP-POS=3; SEGMENT=A; BUFFER-TIME=100 | SAME POS AS 5 | | 200 Secs (200 Secs) [==>] | [1] |
| 12 | Move to 0 | NONE | COS, ALIGN/OSM | | FOCUS=0 | | | 0 Secs (0 Secs) [==>] | [1] |

Exposures

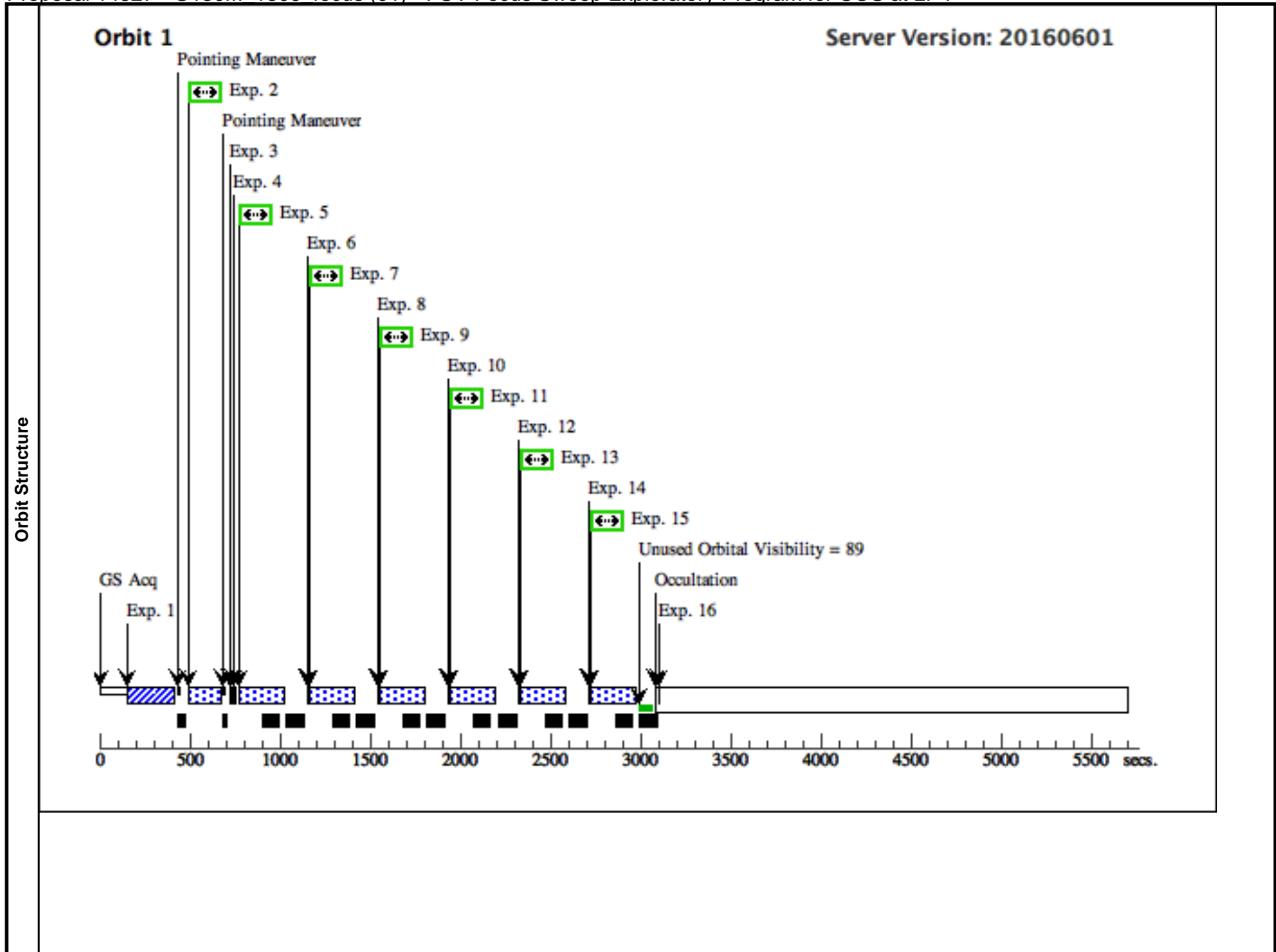| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 13 | 1309_A_f-0 (COS.sp.606 970) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1309 A | FP-POS=3; SEGMENT=A; BUFFER-TIME=10 0 | SAME POS AS 5 | 200 Secs (200 Secs) *[==>]* | *[1]* |
| 14 | Move to +20 0 | NONE | COS, ALIGN/OSM | | FOCUS=+200 | | 0 Secs (0 Secs) *[==>]* | *[1]* |
| 15 | 1309_A_f+2 00 (COS.sp.606 970) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1309 A | FP-POS=3; SEGMENT=A; BUFFER-TIME=10 0 | SAME POS AS 5 | 200 Secs (200 Secs) *[==>]* | *[1]* |
| 16 | Move to +40 0 | NONE | COS, ALIGN/OSM | | FOCUS=+400 | | 0 Secs (0 Secs) *[==>]* | *[1]* |
| 17 | 1309_A_f+4 00 (COS.sp.606 970) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1309 A | FP-POS=3; SEGMENT=A; BUFFER-TIME=10 0 | SAME POS AS 5 | 200 Secs (200 Secs) *[==>]* | *[2]* |
| 18 | Move to +60 0 | NONE | COS, ALIGN/OSM | | FOCUS=+600 | | 0 Secs (0 Secs) *[==>]* | *[2]* |
| 19 | 1309_A_f+6 00 (COS.sp.606 970) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1309 A | FP-POS=3; SEGMENT=A; BUFFER-TIME=10 0 | SAME POS AS 5 | 200 Secs (200 Secs) *[==>]* | *[2]* |
| 20 | Move to +80 0 | NONE | COS, ALIGN/OSM | | FOCUS=+800 | | 0 Secs (0 Secs) *[==>]* | *[2]* |
| 21 | 1309_A_f+8 00 (COS.sp.606 970) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1309 A | FP-POS=3; SEGMENT=A; BUFFER-TIME=10 0 | SAME POS AS 5 | 200 Secs (200 Secs) *[==>]* | *[2]* |
| 22 | Move to +10 00 | NONE | COS, ALIGN/OSM | | FOCUS=+1000 | | 0 Secs (0 Secs) *[==>]* | *[2]* |
| 23 | 1309_A_f+1 000 (COS.sp.606 970) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1309 A | FP-POS=3; SEGMENT=A; BUFFER-TIME=10 0 | SAME POS AS 5 | 200 Secs (200 Secs) *[==>]* | *[2]* |
| 24 | Set FUVB v oltage to 16 3 | DARK | S/C, DATA, NONE | | | SAA CONTOUR 31; SPEC COM INSTR ELHLTHVF; QASISTATES COS FUV HVLOW HVS EGB; QESIPARM ENDC TSB 163; QESIPARM SEGM ENT B | 285 Secs (285 Secs) *[==>]* | *[2]* |

*Comments: Special commanding exposure to set HV=163 for FUVB*

| 25 | 1309_B_f+1000 (COS.sp.606977) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1309 A | FP-POS=3; SEGMENT=B; BUFFER-TIME=111 | SAME POS AS 5 | 110 Secs (110 Secs) [==>] | [2] |
|---|---|---|---|---|---|---|---|---|

*Comments: Switch to segment B, this exposure is at a focus offset of +1000. S/N=37 at 1230 A*

| 26 | Move to +800 | NONE | COS, ALIGN/OSM | | FOCUS=+800 | | 0 Secs (0 Secs) [==>] | [2] |
|---|---|---|---|---|---|---|---|---|
| 27 | 1309_B_f+800 (COS.sp.606977) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1309 A | FP-POS=3; SEGMENT=B; BUFFER-TIME=111 | SAME POS AS 5 | 110 Secs (110 Secs) [==>] | [2] |
| 28 | Move to +600 | NONE | COS, ALIGN/OSM | | FOCUS=+600 | | 0 Secs (0 Secs) [==>] | [2] |
| 29 | 1309_B_f+600 (COS.sp.606977) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1309 A | FP-POS=3; SEGMENT=B; BUFFER-TIME=111 | SAME POS AS 5 | 110 Secs (110 Secs) [==>] | [2] |
| 30 | Move to +400 | NONE | COS, ALIGN/OSM | | FOCUS=+400 | | 0 Secs (0 Secs) [==>] | [2] |
| 31 | 1309_B_f+400 (COS.sp.606975) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1309 A | FP-POS=3; SEGMENT=B; BUFFER-TIME=111 | SAME POS AS 5 | 110 Secs (110 Secs) [==>] | [3] |

*Comments: S/N=39 at 1230A*

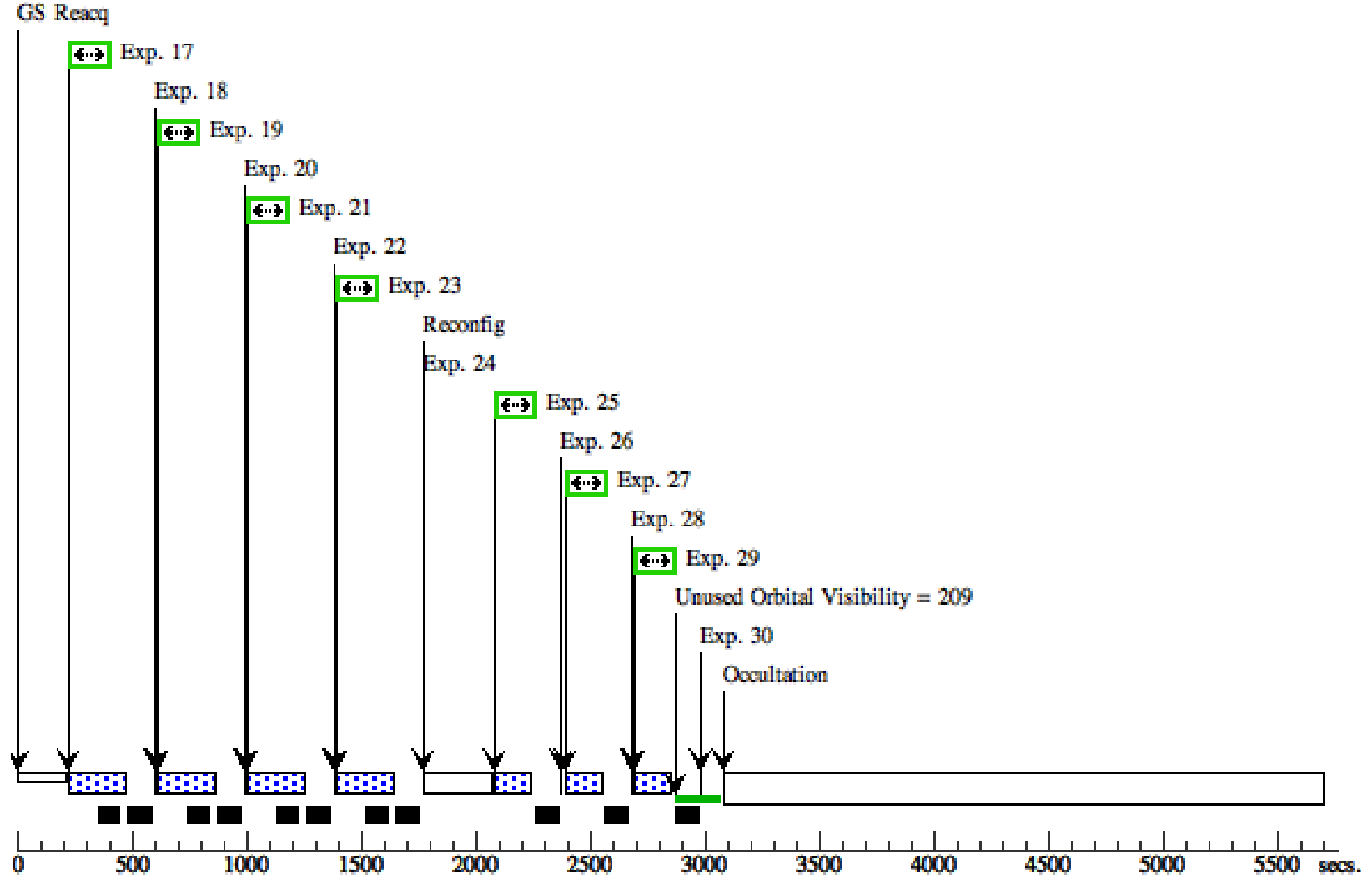| 32 | Move to +200 | NONE | COS, ALIGN/OSM | | FOCUS=+200 | | 0 Secs (0 Secs) [==>] | [3] |
|---|---|---|---|---|---|---|---|---|
| 33 | 1309_B_f+200 (COS.sp.606975) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1309 A | FP-POS=3; SEGMENT=B; BUFFER-TIME=111 | SAME POS AS 5 | 110 Secs (110 Secs) [==>] | [3] |
| 34 | Move to 0 | NONE | COS, ALIGN/OSM | | FOCUS=0 | | 0 Secs (0 Secs) [==>] | [3] |
| 35 | 1309_B_f-0 (COS.sp.606975) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1309 A | FP-POS=3; SEGMENT=B; BUFFER-TIME=111 | SAME POS AS 5 | 110 Secs (110 Secs) [==>] | [3] |
| 36 | Move to -200 | NONE | COS, ALIGN/OSM | | FOCUS=-200 | | 0 Secs (0 Secs) [==>] | [3] |
| 37 | 1309_B_f-200 (COS.sp.606975) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1309 A | FP-POS=3; SEGMENT=B; BUFFER-TIME=111 | SAME POS AS 5 | 110 Secs (110 Secs) [==>] | [3] |
| 38 | Move to -400 | NONE | COS, ALIGN/OSM | | FOCUS=-400 | | 0 Secs (0 Secs) [==>] | [3] |

| 39 | 1309_B_f-4 00 (COS.sp.606 975) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1309 A | FP-POS=3; SEGMENT=B; BUFFER-TIME=11 1 | SAME POS AS 5 | 110 Secs  (110 Secs) *[==>]* | *[3]* |
|---|---|---|---|---|---|---|---|---|
| 40 | Move to -60 0 | NONE | COS, ALIGN/OSM | | FOCUS=-600 | | 0 Secs  (0 Secs) *[==>]* | *[3]* |
| 41 | 1309_B_f-6 00 (COS.sp.606 977) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1309 A | FP-POS=3; SEGMENT=B; BUFFER-TIME=11 1 | SAME POS AS 5 | 110 Secs  (110 Secs) *[==>]* | *[3]* |

*Comments: S/N=37 at 1230A*

| 42 | Move to -80 0 | NONE | COS, ALIGN/OSM | | FOCUS=-800 | | 0 Secs  (0 Secs) *[==>]* | *[3]* |
|---|---|---|---|---|---|---|---|---|
| 43 | 1309_B_f-8 00 (COS.sp.606 977) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1309 A | FP-POS=3; SEGMENT=B; BUFFER-TIME=11 1 | SAME POS AS 5 | 110 Secs  (110 Secs) *[==>]* | *[3]* |
| 44 | Return to H VNOM | DARK | S/C, DATA, NONE | | | SAA CONTOUR 31; SPEC COM INSTR ELHVADJPROP; NEW OBSET; QASISTATES COS SI OBSERVE OBSE RVE; QASISTATES COS FUV HVSEGB HVS EGB; QASISTATES COS NUV HVON HVON ; QESIPARM ENDC TSB 169; QESIPARM SEGM ENT B | 46 Secs  (46 Secs) *[==>]* | *[3]* |

*Comments: Use this S/C to force a return to the nominal Segment B voltage (FUVB=169)*

*HV increase is (169-163) = 6 for Segment B.  Therefore, exposure time is 39 seconds + ceiling(6*1.1) = 46 seconds.*
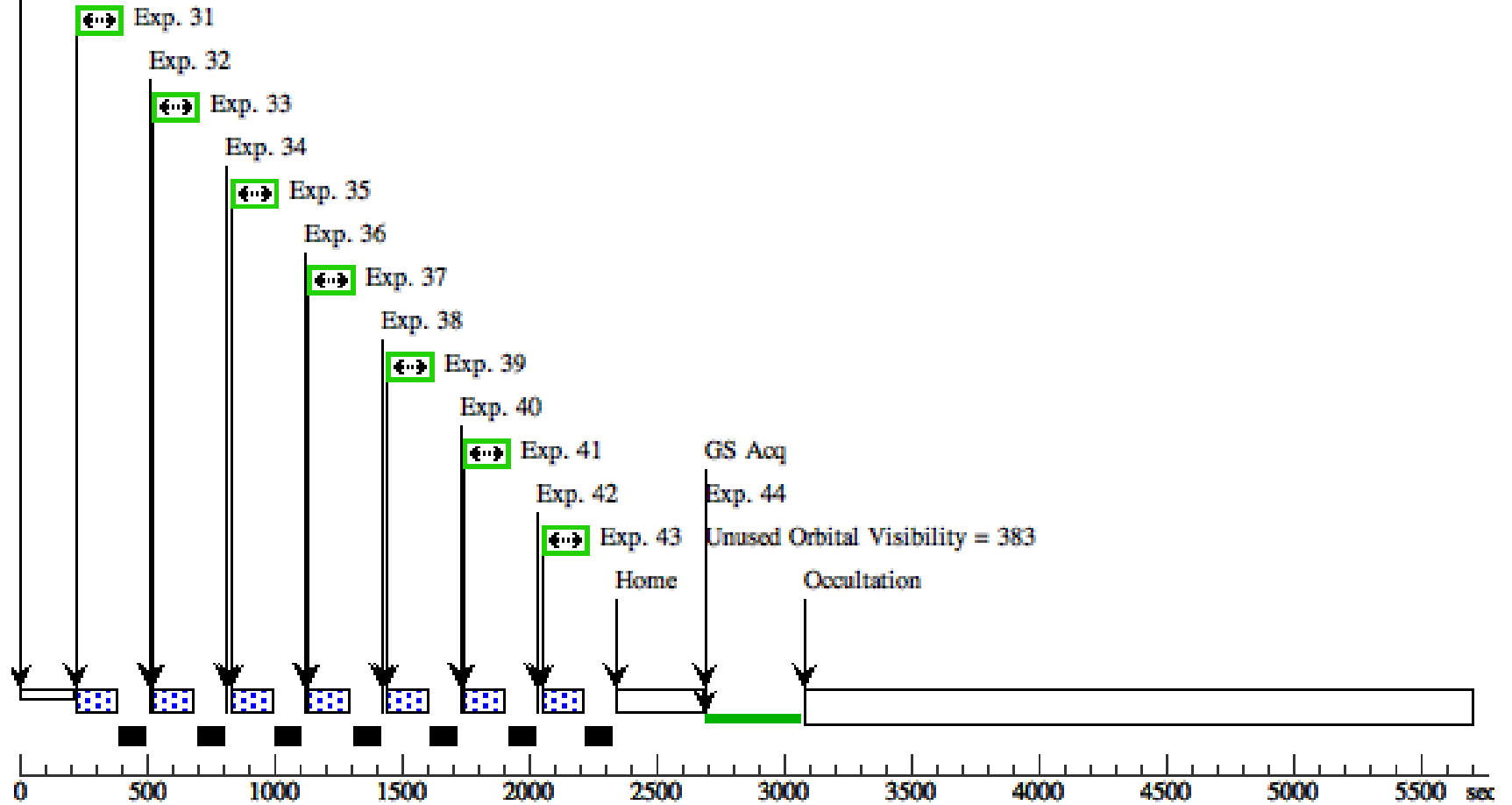
**Orbit 1**

Server Version: 20160601

Pointing Maneuver

Exp. 2

Pointing Maneuver

Exp. 3

Exp. 4

Exp. 5

Exp. 6

Exp. 7

Exp. 8

Exp. 9

Exp. 10

Exp. 11

Exp. 12

Exp. 13

Exp. 14

Exp. 15

Unused Orbital Visibility = 89

GS Acq

Occultation

Exp. 1

Exp. 16

Orbit Structure

0    500    1000    1500    2000    2500    3000    3500    4000    4500    5000    5500  secs.

**Orbit 2**

GS Reacq

Exp. 17

Exp. 18

Exp. 19

Exp. 20

Exp. 21

Exp. 22

Exp. 23

Reconfig

Exp. 24

Exp. 25

Exp. 26

Exp. 27

Exp. 28

Exp. 29

Unused Orbital Visibility = 209

Exp. 30

Occultation

0    500    1000    1500    2000    2500    3000    3500    4000    4500    5000    5500    secs.

**Orbit 3**

Server Version: 20160601

GS Reacq

Exp. 31
Exp. 32
Exp. 33
Exp. 34
Exp. 35
Exp. 36
Exp. 37
Exp. 38
Exp. 39
Exp. 40
Exp. 41
Exp. 42
Exp. 43

GS Acq
Exp. 44
Unused Orbital Visibility = 383

Home

Occultation

0    500   1000   1500   2000   2500   3000   3500   4000   4500   5000   5500   sec

| | Proposal 14527, G130M_1222_focus (02), scheduling | Fri Jul 29 17:44:58 GMT 2016 |
|---|---|---|
| **Visit** | **Diagnostic Status: Warning** | |
| | Scientific Instruments: COS, COS/FUV, COS/NUV | |
| | Special Requirements: SCHED 80%; BEFORE 24-JUL-2016:00:00:00 | |

| | |
|---|---|
| **Diagnostics** | (G130M_1222_focus (02)) Warning (Form): For the best data quality, it is strongly recommended that all four FP-POS positions be used when observing at a given COS CENWAVE setting. |
| | (G130M_1222_focus (02)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE NO ORIENT |
| | (G130M_1222_focus (02)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE |

| | # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|---|
| **Fixed Targets** | (1) | V-KL-UMA | RA: 11 47 14.4900 (176.8103750d) | Proper Motion RA: 0.00333 sec of time/yr | V=13.28 | Reference Frame: ICRS |
| | | Alt Name1: FEIGE48 | Dec: +61 15 31.80 (61.25883d) | Proper Motion Dec: 0 | | |
| | | | Equinox: J2000 | Epoch of Position: 2000 | | |
| | *Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.* | | | | | |
| | *Extended=NO* | | | | | |

**Exposures**

| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ACQ/IMAGE (COS.ta.607556) | (1) V-KL-UMA | COS/NUV, ACQ/IMAGE, BOA | MIRRORA | | | | 16 Secs  (16 Secs) [==>] | [1] |
| | Comments: S/N=60 | | | | | | | | |
| 2 | Initialize G130M/1222 at nominal aperture and focus position (COS.sp.606970) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1222 A | FP-POS=3; BUFFER-TIME=110; WAVECAL=NO; FLASH=NO; SEGMENT=B | | | 0.1 Secs  (0.1 Secs) [==>] | [1] |
| | Comments: This exposure sets the correct instrument configuration before the aperture is moved. | | | | | | | | |
| 3 | Place aperture at -5.0 arc sec in XD | NONE | COS, ALIGN/APER | | XAPER=53; YAPER=0.0 | | | 0.0 Secs  (0 Secs) [==>] | [1] |
| | Comments: Assumes 21 motor steps per " in XAPER.<br>This command moves the PSA from -2.5" (LP3) to -5.0" (LP4). | | | | | | | | |
| 4 | Move to -1000 | NONE | COS, ALIGN/OSM | | FOCUS=-1000 | | | 0 Secs  (0 Secs) [==>] | [1] |
| 5 | 1222_B_f-1000 (COS.sp.607559) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1222 A | FP-POS=3; SEGMENT=B; BUFFER-TIME=129 | POS TARG 0.0,-2.5 | | 100 Secs  (100 Secs) [==>] | [1] |
| | Comments: This exposure time give a S/N=30 at 1150 | | | | | | | | |
| 6 | Move to -800 | NONE | COS, ALIGN/OSM | | FOCUS=-800 | | | 0 Secs  (0 Secs) [==>] | [1] |
| 7 | 1222_B_f-800 (COS.sp.607559) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1222 A | FP-POS=3; SEGMENT=B; BUFFER-TIME=129 | SAME POS AS 5 | | 100 Secs  (100 Secs) [==>] | [1] |
| | Comments: S/N = 30 | | | | | | | | |
| 8 | Move to -600 | NONE | COS, ALIGN/OSM | | FOCUS=-600 | | | 0 Secs  (0 Secs) [==>] | [1] |
| 9 | 1222_B_f-600 (COS.sp.607559) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1222 A | FP-POS=3; SEGMENT=B; BUFFER-TIME=129 | SAME POS AS 5 | | 100 Secs  (100 Secs) [==>] | [1] |
| | Comments: S/N = 30 | | | | | | | | |
| 10 | Move to -400 | NONE | COS, ALIGN/OSM | | FOCUS=-400 | | | 0 Secs  (0 Secs) [==>] | [1] |
| 11 | 1222_B_f-400 (COS.sp.607559) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1222 A | FP-POS=3; SEGMENT=B; BUFFER-TIME=129 | SAME POS AS 5 | | 100 Secs  (100 Secs) [==>] | [1] |
| | Comments: S/N = 30 | | | | | | | | |
| 12 | Move to -200 | NONE | COS, ALIGN/OSM | | FOCUS=-200 | | | 0 Secs  (0 Secs) [==>] | [1] |

| 13 | 1222_B_f-2 00 (COS.sp.607 559) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1222 A | FP-POS=3; SEGMENT=B; BUFFER-TIME=12 9 | SAME POS AS 5 | 100 Secs (100 Secs) [==>] | [1] |
| Comments: S/N = 30 | | | | | | | | |
| 14 | Move to 0 | NONE | COS, ALIGN/OSM | | FOCUS=0 | | 0 Secs (0 Secs) [==>] | [1] |
| 15 | 1222_B_f-0 (COS.sp.607 559) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1222 A | FP-POS=3; SEGMENT=B; BUFFER-TIME=12 9 | SAME POS AS 5 | 100 Secs (100 Secs) [==>] | [1] |
| Comments: S/N = 30 | | | | | | | | |
| 16 | Move to +20 0 | NONE | COS, ALIGN/OSM | | FOCUS=+200 | | 0 Secs (0 Secs) [==>] | [1] |
| 17 | 1222_B_f+2 00 (COS.sp.607 559) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1222 A | FP-POS=3; SEGMENT=B; BUFFER-TIME=12 9 | SAME POS AS 5 | 100 Secs (100 Secs) [==>] | [1] |
| Comments: S/N = 30 | | | | | | | | |
| 18 | Move to +40 0 | NONE | COS, ALIGN/OSM | | FOCUS=+400 | | 0 Secs (0 Secs) [==>] | [1] |
| 19 | 1222_B_f+4 00 (COS.sp.607 559) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1222 A | FP-POS=3; SEGMENT=B; BUFFER-TIME=12 9 | SAME POS AS 5 | 100 Secs (100 Secs) [==>] | [1] |
| Comments: S/N = 30 | | | | | | | | |
| 20 | Move to +60 0 | NONE | COS, ALIGN/OSM | | FOCUS=+600 | | 0 Secs (0 Secs) [==>] | [1] |
| 21 | 1222_B_f+6 00 (COS.sp.607 559) | (1) V-KL-UMA | COS/FUV, TIME-TAG, PSA | G130M 1222 A | FP-POS=3; SEGMENT=B; BUFFER-TIME=12 9 | SAME POS AS 5 | 100 Secs (100 Secs) [==>] | [1] |
| Comments: S/N = 30 | | | | | | | | |