



## 13195 - COS Side 2 Internal FUV Wavelength Verification

Cycle: 26, Proposal Category: CAL/COS

(Availability Mode: RESTRICTED)

### INVESTIGATORS

<i>Name</i>	<i>Institution</i>	<i>E-Mail</i>
<b>Dr. William J. Fischer (PI) (Contact)</b>	<b>Space Telescope Science Institute</b>	<b>wfischer@stsci.edu</b>
Dr. David J. Sahnou (CoI)	Space Telescope Science Institute	sahnou@stsci.edu
Dr. Cristina Oliveira (CoI)	Space Telescope Science Institute	oliveira@stsci.edu
Dr. Steven Penton (CoI)	University of Colorado at Boulder	spenton@colorado.edu
Mr. John J. Bacinski (CoI)	Space Telescope Science Institute	bacinski@stsci.edu

### VISITS

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
01	WAVE	COS/FUV	1	31-Jul-2019 10:00:55.0	yes
02	WAVE	COS/FUV	1	31-Jul-2019 10:00:56.0	yes
03	DARK DEUTERIUM NONE	COS COS/FUV S/C	1	31-Jul-2019 10:00:58.0	yes

3 Total Orbits Used

### ABSTRACT

Test that the OSM1 coarse resolver goes to the proper location at blue mode and all FUV extreme central wavelength settings using the side-2 electronics.

Also test deuterium lamp #1 functionality at side-2.

**OBSERVING DESCRIPTION**

COS SIDE-2 ACTIVITY TITLE: COS Side 2 Internal FUV Wavelength Verification

DESCRIPTION:

Visit 01 (internal) - Take lampflash data at G130M central wavelengths [1055, 1096, 1291, 1222, 1327].

Visit 02 (internal) - Take lampflash data at G160M central wavelengths [1577, 1623] and G140L [1280, 1105].

Visit 03 (internal) - Take deuterium lamp #1 exposure to test its functionality with side-2 electronics.

This entire activity will be conducted as a series of internal exposures

DEPENDENCIES:

DURATION: 3 orbits (internal)

----- Additional Comments -----

SCHEDULING CONSTRAINTS:

\*\* Following a success oriented approach the constraints in this program were modified: This program should only execute after program 13190 (COS Side 2 FUV Detector Recovery After MEB Side Switch) completes - C. Oliveira Aug 28 2013 \*\*

ANALYSES & EXPECTED RESULTS:

Wavecal data will be run through CALCOS in order to determine the SHIFT1A and SHIFT1B keywords, the cross-correlation AD offset from the LAMPTAB template taken with side-1 electronics.

Shifts should be no greater than 1/2 FP-POS.

Special software needs: None

FTEs (days/weeks) needed for analysis: 1 FTE day

-----  
All comments above here are from the original submission by Sean Lockwood

2017-10-23:

PI switched to Nick Indriolo and CO-Is no longer on the COS team removed

"Optional" keywords have been added as required by the COS2025 changes to APT

All observations of the Pt-Ne lamp have been set to execute at LP1

Segment usage has been explicitly defined

The deuterium flat has been set to execute at LP4 (since the LP1 PSA region is severely gain-sagged)

2019-05-14:

PI is Will Fischer, following Nick Indriolo's departure from the Institute.

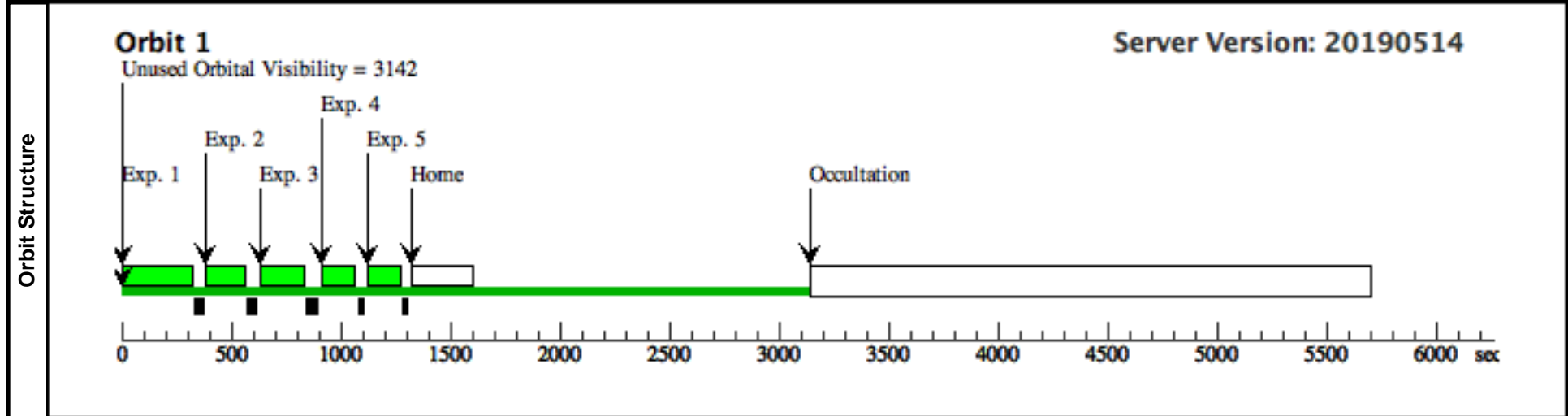
Dave Sahnou remarks that this program will also give us a quick check of the gain measured while using the Side 2 electronics. To facilitate comparison with deuterium data taken within the previous six months (PID 15534), Visit 03 is being replaced with an exact copy of 15534, visit 4A.

Proposal 13195 - Visit 01 - COS Side 2 Internal FUV Wavelength Verification

Wed Jul 31 14:00:58 GMT 2019

<b>Visit</b>	<b>Proposal 13195, Visit 01, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: COS/FUV Special Requirements: (none) <i>Comments: G130M wavecal exposures for side-2 electronics switch.</i>									

<b>Exposures</b>	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
		1		WAVE	COS/FUV, TIME-TAG, WCA	G130M 1055 A	FP-POS=3; LIFETIME-POS=L P1; SEGMENT=BOTH			[==>]
	2		WAVE	COS/FUV, TIME-TAG, WCA	G130M 1096 A	FP-POS=3; LIFETIME-POS=L P1; SEGMENT=BOTH			[==>]	[1]
	3		WAVE	COS/FUV, TIME-TAG, WCA	G130M 1222 A	FP-POS=3; LIFETIME-POS=L P1; SEGMENT=BOTH			[==>]	[1]
	4		WAVE	COS/FUV, TIME-TAG, WCA	G130M 1291 A	FP-POS=3; LIFETIME-POS=L P1; SEGMENT=BOTH			[==>]	[1]
	5		WAVE	COS/FUV, TIME-TAG, WCA	G130M 1327 A	FP-POS=3; LIFETIME-POS=L P1; SEGMENT=BOTH			[==>]	[1]

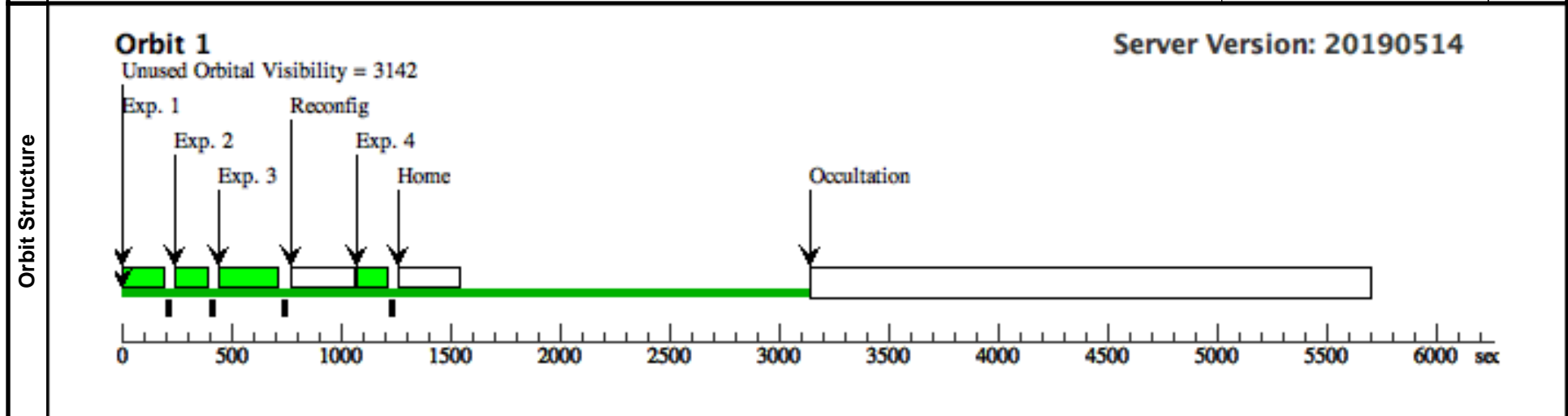


Proposal 13195 - Visit 02 - COS Side 2 Internal FUV Wavelength Verification

Wed Jul 31 14:00:59 GMT 2019

<b>Visit</b>	<b>Proposal 13195, Visit 02, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: COS/FUV Special Requirements: (none) <i>Comments: G160M and G140L wavecal exposures for side-2 electronics switch.</i>									

<b>Exposures</b>	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
		1		WAVE	COS/FUV, TIME-TAG, WCA	G160M 1577 A	FP-POS=3; LIFETIME-POS=L P1; SEGMENT=BOTH			[==>]
	2		WAVE	COS/FUV, TIME-TAG, WCA	G160M 1623 A	FP-POS=3; LIFETIME-POS=L P1; SEGMENT=BOTH			[==>]	[1]
	3		WAVE	COS/FUV, TIME-TAG, WCA	G140L 1280 A	FP-POS=3; LIFETIME-POS=L P1; SEGMENT=BOTH			[==>]	[1]
	4		WAVE	COS/FUV, TIME-TAG, WCA	G140L 1105 A	FP-POS=3; LIFETIME-POS=L P1; SEGMENT=A			[==>]	[1]



# Proposal 13195 - Visit 03 - COS Side 2 Internal FUV Wavelength Verification

<b>Visit</b>	<p><b>Proposal 13195, Visit 03, implementation</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Scientific Instruments: S/C, COS, COS/FUV</p> <p>Special Requirements: PARALLEL</p> <p><i>Comments: This visit collects data at LP4. It uses the HV values appropriate for the Standard Modes (163/163).</i></p>	Wed Jul 31 14:00:59 GMT 2019
<b>Diagnostics</b>	<p>(Visit 03) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU</p> <p>(Aperture Adjustment 1 for Segment A (03.002)) Warning (Form): This ALIGN/APER exposure should be preceded by a science exposure to define the starting position for the scan.</p>	

Proposal 13195 - Visit 03 - COS Side 2 Internal FUV Wavelength Verification

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
Exposures	1	Adjust HV to LP4 value	DARK	S/C, DATA, NONE		SAA CONTOUR 31; SPEC COM INSTR ELHLTHVF; QASISTATES COS FUV HVLOW HVN OM; QESIPARM ENDC TSA 163; QESIPARM ENDC TSB 163; QESIPARM SEGMENT AB		295 Secs (295 Secs) [==>]	[1]	
	<i>Comments: Adjust the HV to the LP4 Standard Modes values.</i>									
	2	Aperture Adjustment 1 for Segment A	NONE	COS, ALIGN/APER		XAPER=-267			0.0 Secs (0 Secs) [==>]	[1]
	<i>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.</i>									
	<i>PSA LAPXSTP value at LP4 is 235.1 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 - 235.1 = -267</i>									
Exposures	3	G130M/1309 Deuterium Exposure 1	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M 1309 A	CURRENT=MEDIUM; BUFFER-TIME=111; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=L P4		400 Secs (400 Secs) [==>]	[1]	
	<i>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.</i>									
	4	Aperture Adjustment 2 for Segment A	NONE	COS, ALIGN/APER		XAPER=-321	QESIPARM XSTEP S -54		0.0 Secs (0 Secs) [==>]	[1]
	<i>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.</i>									
	<i>PSA LAPXSTP value at LP4 is 235.1 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 - 235.1 = -321. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS -54" [(-321 - -267) = -54] Special Requirement is necessary to move the aperture to the correct location.</i>									
Exposures	5	G130M/1309 Deuterium Exposure 2	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G130M 1309 A	CURRENT=MEDIUM; BUFFER-TIME=111; FP-POS=1; SEGMENT=BOTH; LIFETIME-POS=L P4		400 Secs (400 Secs) [==>]	[1]	
	<i>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.</i>									

# Proposal 13195 - Visit 03 - COS Side 2 Internal FUV Wavelength Verification

6	Aperture Adjustment 1 for Segment B	NONE	COS, ALIGN/APER	XAPER=-276	QESIPARM XSTEP S 45	0.0 Secs (0 Secs) [==>]	[1]
<p>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.</p> <p>PSA LAPXSTP value at LP4 is 235.1 Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at Position 1 for LP4 is -41 Therefore, XAPER is set to <math>-41 - 235.1 = -276</math>. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS 45" <math>[(-276 - -321) = +45]</math> Special Requirement is necessary to move the aperture to the correct location.</p>							
7	G160M/1600 Deuterium Exposure 1	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M 1600 A	CURRENT=MEDIUM; BUFFER-TIME=111; FP-POS=4; SEGMENT=BOTH; LIFETIME-POS=L P4	400 Secs (400 Secs) [==>]	[1]
<p>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.</p>							
8	Aperture Adjustment 2 for Segment B	NONE	COS, ALIGN/APER	XAPER=-330	QESIPARM XSTEP S -54	0.0 Secs (0 Secs) [==>]	[1]
<p>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.</p> <p>PSA LAPXSTP value at LP4 is 235.1 Desired LAPXSTP value for FCA to illuminate Segment B with G160M/1600 at Position 2 for LP4 is -95. Therefore, XAPER is set to <math>-95 - 235.1 = -330</math>. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS -54" <math>[(-330 - -276) = -54]</math> Special Requirement is necessary to move the aperture to the correct location.</p>							
9	G160M/1600 Deuterium Exposure 2	DEUTERIUM	COS/FUV, TIME-TAG, FCA	G160M 1600 A	CURRENT=MEDIUM; BUFFER-TIME=111; FP-POS=4; SEGMENT=BOTH; LIFETIME-POS=L P4	400 Secs (400 Secs) [==>]	[1]
<p>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.</p>							
10	Return Aperture to Nominal Position	NONE	COS, ALIGN/APER	XAPER=0	QESIPARM XSTEP S 330	0 Secs (0 Secs) [==>]	[1]
<p>Comments: Return the aperture to its nominal position, i.e. XAPER=0. *HOWEVER*, because of the TRANS rules, the "QESIPARM XSTEPS +330" <math>[(0 - -330) = +330]</math> Special Requirement is necessary to move the aperture to its correct location.</p>							
11	Return to nominal HV for standard modes	DARK	S/C, DATA, NONE		SPEC COM INSTR ELHVADJPROP; QESIPARM ENDC TSA 163; QESIPARM ENDC TSB 163	39 Secs (39 Secs) [==>]	[1]
<p>Comments: Set HV to nominal values used for the standard modes. Exposure Time is 39 seconds since the HV is not increasing on either segment.</p>							



