



## 16106 - Initial Test of COS/FUV Spectrum Placement at Lifetime Position 5

Cycle: 27, Proposal Category: CAL/COS

(Availability Mode: RESTRICTED)

### INVESTIGATORS

<i>Name</i>	<i>Institution</i>	<i>E-Mail</i>
<b>Dr. David J. Sahnou (PI) (Contact)</b>	<b>Space Telescope Science Institute</b>	<b>sahnou@stsci.edu</b>
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Dr. Marc Rafelski (CoI) (Contact)	Space Telescope Science Institute	mrafelski@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	(1) WD0308-565 DARK NONE	COS COS/FUV COS/NUV S/C	3	06-Apr-2020 13:01:28.0	yes
02	(1) WD0308-565 DARK NONE	COS COS/FUV COS/NUV S/C	3	06-Apr-2020 13:01:30.0	yes

6 Total Orbits Used

**ABSTRACT**

This program obtains deep (S/N = 60 per resel) exposures of WD0308-565 with G130M/1222, G130M/1291, and G160M/1623 in order to determine if LP5 can be placed +5.4" from LP1. We will derive preliminary spectral profiles and compare their footprints to the most recent gain maps.

**OBSERVING DESCRIPTION**

This program obtains spectra of WD0308-565 at offsets of +5.4" (cross-dispersion) and +0" (dispersion) from LP1 in order to determine if there is room to place the LP5 spectra in a location which will permit simultaneous tagflashes to be taken. Observations are taken with G130M/1222, G130M/1291, and G160M/1623, since models show that these cenwaves are most likely to impinge on the LP2 gain sag holes.

This program is modeled on Program 14841, Optimization of COS/FUV spectrum placement at Lifetime Position 4, which made similar measurements for G130M/1222 and G130M/1291 at LP4.

The observations consists of two visits with a total of six orbits. The observations will be made with the following High Voltage values, which are the likely operating voltages at LP5:

Cenwave	HVA/HVB
-----	-----
G130M/1222	169/169
G130M/1291	163/163
G160M/1623	167/169

The spectrograph focus will not be changed in this program, since the cross dispersion profiles are insensitive to the focus value.

Our target is a total S/N of ~60 across all FP-POSSs at 1210 Angstroms for G130M/1291, at 1130 Angstroms for G130M/1222, and at 1500 Angstroms for G160M/1623 to ensure adequate spectral extraction near sagged regions of the FUVB segment.

Program layout:

Visit 01:

- \* ACQ/IMAGE #1
- \* ACQ/IMAGE #2 to ensure optimal centering of target
- \* G130M/1291 Initialization exposure at LP2
- \* Move aperture 40 steps (1.9" from LP2)
- \* Set HV to 163/163
- \* G130M/1291 exposures at FP-POS=3,4 with POS TARG of 0,1.9
- \* Set HV to 169/169
- \* G130M/1222 exposures at FP-POS=1,2,3,4 with POS TARG of 0,1.9
- \* Set HV to 163/163

Visit 02:

- \* ACQ/IMAGE #1
- \* ACQ/IMAGE #2 to ensure optimal centering of target
- \* G130M/1291 Initialization exposure at LP2
- \* Move aperture 40 steps (1.9" from LP2)
- \* Set HV to 163/163
- \* G130M/1291 exposures at FP-POS=3,4 with POS TARG of 0, 1.9
- \* Set HV to 167/169
- \* G160M/1623 exposures at FP-POS=1,2,3,4 with POS TARG of 0, 1.9
- \* Set HV to 163/163

Proposal 16106 - G130M/1291 and G130M/1222 (01) - Initial Test of COS/FUV Spectrum Placement at Lifetime Position 5

Mon Apr 06 17:01:31 GMT 2020

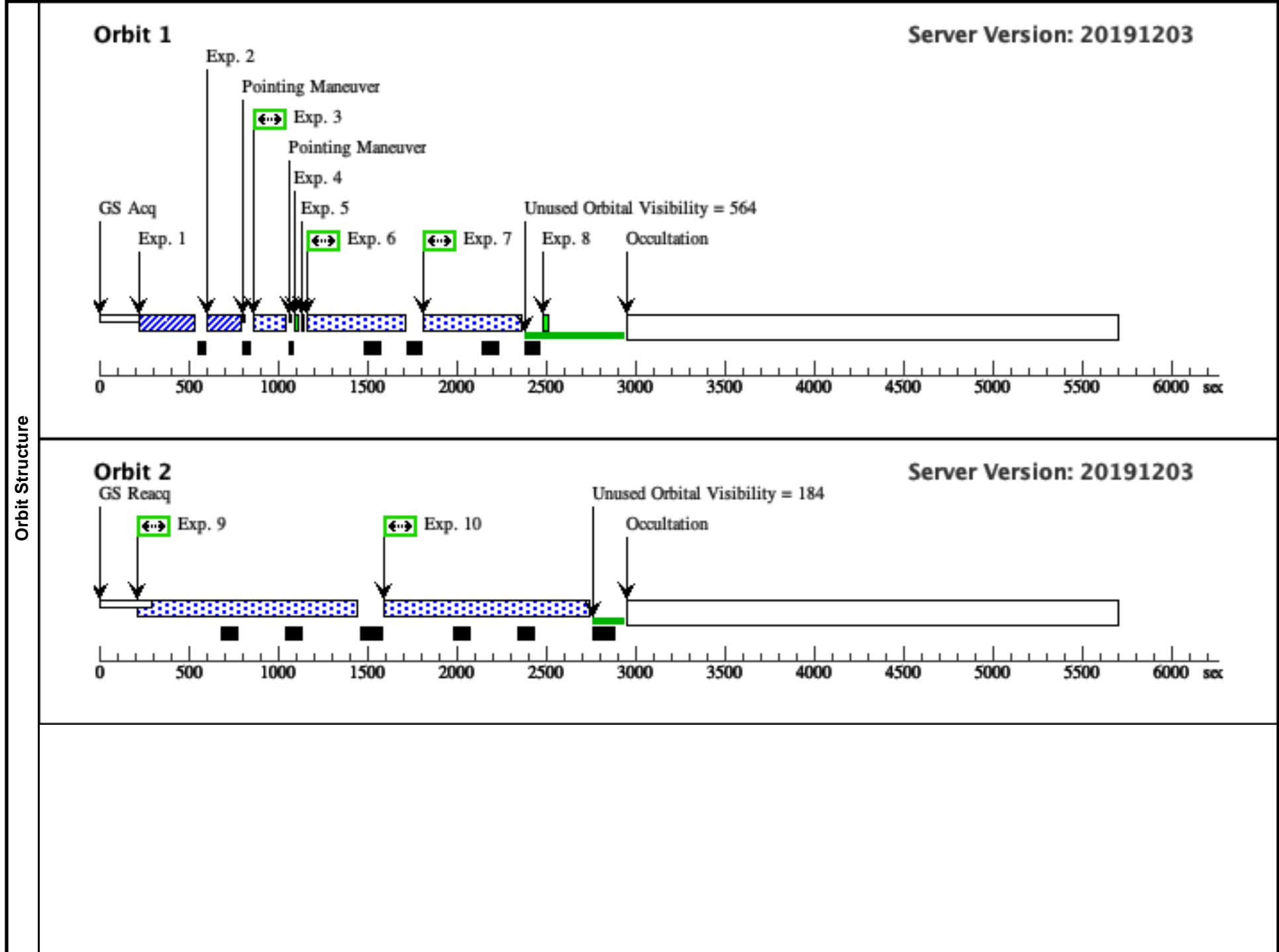
<b>Visit</b>	<p><b>Proposal 16106, G130M/1291 and G130M/1222 (01), implementation</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Scientific Instruments: S/C, COS, COS/FUV, COS/NUV</p> <p>Special Requirements: SCHED 100%</p> <p><i>Comments: The first exposure is an ACQ/IMAGE, which should provide very good acquisition and positioning of the spectrum. This is followed by a short science exposure to define the reference point for subsequent ALIGN/APER exposures.</i></p> <p><i>Buffer times are equivalent to the ETC returned values multiplied by 0.9 as a safety margin. We do not use the 2/3 safety margin based on the fact that the target has been observed before and its SED is well characterized.</i></p>																																			
	<p>(G130M/1291 and G130M/1222 (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE</p> <p>(G130M/1291 and G130M/1222 (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE</p> <p>(G130M/1291 and G130M/1222 (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE</p> <p>(G130M/1291 and G130M/1222 (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE</p> <p>(G130M/1291 and G130M/1222 (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE</p> <p>(G130M/1291 and G130M/1222 (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE</p> <p>(G130M/1291 and G130M/1222 (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE NO ORIENT</p> <p>(G130M/1291 and G130M/1222 (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE NO ORIENT</p> <p>(G130M/1291 and G130M/1222 (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE NO ORIENT</p> <p>(G130M/1291 and G130M/1222 (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE NO ORIENT</p> <p>(G130M/1291 and G130M/1222 (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE NO ORIENT</p> <p>(G130M/1291 and G130M/1222 (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE NO ORIENT</p>																																			
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<b>Fixed Targets</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td>WD0308-565</td> <td>RA: 03 09 47.9200 (47.4496667d)</td> <td>Proper Motion RA: 150.6 mas/yr</td> <td>V=14.07+/-0.02</td> <td>Reference Frame: ICRS</td> </tr> <tr> <td></td> <td>Alt Name1: GSC08495-00951</td> <td>Dec: -56 23 49.41 (-56.39706d)</td> <td>Proper Motion Dec: 64.3 mas/yr</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Alt Name2: 3UC068-006526</td> <td>Equinox: J2000</td> <td>Epoch of Position: 2000</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>Radial Velocity: -68 km/sec</td> <td></td> <td></td> </tr> </tbody> </table>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(1)	WD0308-565	RA: 03 09 47.9200 (47.4496667d)	Proper Motion RA: 150.6 mas/yr	V=14.07+/-0.02	Reference Frame: ICRS		Alt Name1: GSC08495-00951	Dec: -56 23 49.41 (-56.39706d)	Proper Motion Dec: 64.3 mas/yr				Alt Name2: 3UC068-006526	Equinox: J2000	Epoch of Position: 2000						Radial Velocity: -68 km/sec			<p><i>Comments: Position and proper motions from the Third U.S. Naval Observatory CCD Astrograph Catalog (UCAC3) Zacharias et al. 2009</i></p> <p>Category=STAR</p> <p>Description=[DB]</p> <p>Extended=NO</p>				
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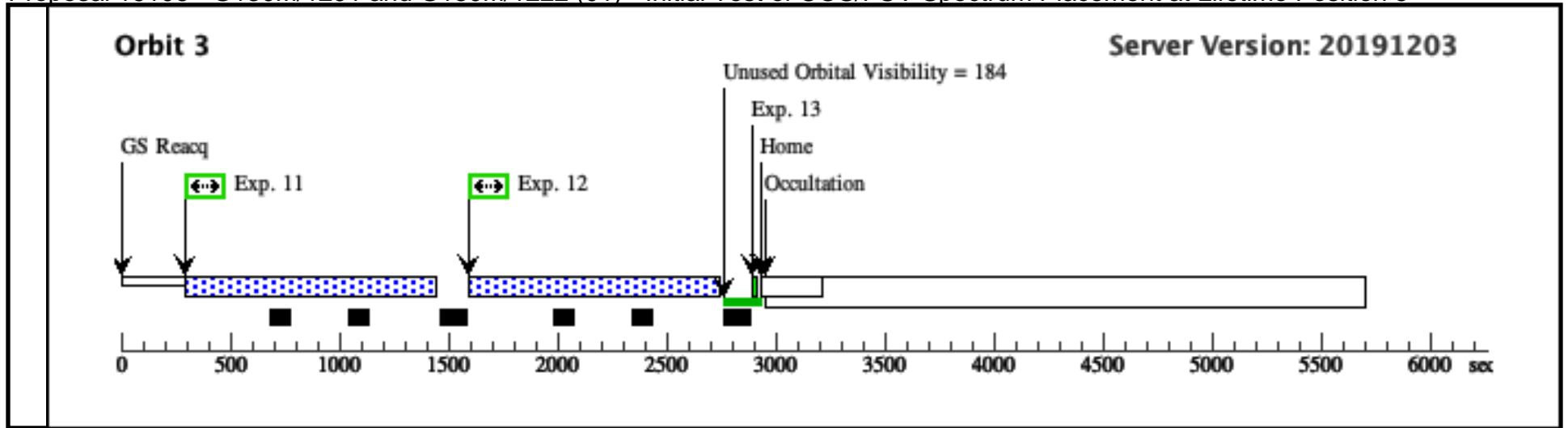
Proposal 16106 - G130M/1291 and G130M/1222 (01) - Initial Test of COS/FUV Spectrum Placement at Lifetime Position 5

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
Exposures	1	ACQ/IMAG E #1 (COS.ta.140 7046)	(1) WD0308-565	COS/NUV, ACQ/IMAGE, BOA	MIRRORA			42 Secs (42 Secs) [==>]	[1]	
	2	ACQ/IMAG E #2 (COS.ta.140 7046)	(1) WD0308-565	COS/NUV, ACQ/IMAGE, BOA	MIRRORA			42 Secs (42 Secs) [==>]	[1]	
	3	Initialize G130M/1291 (COS.sp.140 2474)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=29 0; LIFETIME-POS=L P2		12 Secs (12 Secs) [==>]	[1]	
	<i>Comments: Take an initial exposure at LP2 in order to set the zero point of the aperture moves</i>									
	4	Set HV to 63/163	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR ELHVADJPROP; QESIPARM ENDC TSB 163; QESIPARM ENDC TSA 163		39 Secs (39 Secs) [==>]	[1]
	<i>Comments: Set HV to 163/163</i>									
	<i>Exp time = 39 + ceiling ( max_upward_count_delta * 1.1 )</i>									
<i>Notes: Special observation requirement SAA = 31 needed whenever executing special commands (SAA = 31 is implicitly assumed for all standard COS commands).</i>										
<i>SQL required for qexposure and qaposition to specify the si_used = "COS"</i>										
5	Move Aperture to potential LP5 location (0)	NONE	COS, ALIGN/APER		XAPER=-40; YAPER=0			0.0 Secs (0 Secs) [==>]	[1]	
<i>Comments: Scale is - 21 motor steps/" for XAPER (Cross-dispersion)</i>										
<i>Note: once the APM is moved it will not be reset as long as the config (COS/FUV), aperture, FP-POS, and LP are not changed</i>										
6	G130M/1291 FP=3 (COS.sp.140 2474)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=29 0; LIFETIME-POS=L P2	POS TARG 0,1,9		500 Secs (500 Secs) [==>]	[1]	
7	G130M/1291 FP=4 (COS.sp.140 2474)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=4; BUFFER-TIME=29 0; LIFETIME-POS=L P2	POS TARG 0,1,9		500 Secs (500 Secs) [==>]	[1]	

Proposal 16106 - G130M/1291 and G130M/1222 (01) - Initial Test of COS/FUV Spectrum Placement at Lifetime Position 5

8	Set HV to 1 69/169	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR ELHVADJPROP; QESIPARM ENDC TSB 169; QESIPARM ENDC TSA 169	46 Secs (46 Secs) [==>]	[1]
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9	G130M/122 2 FP=1 (COS.sp.140 2475)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1222 A	FP-POS=1; BUFFER-TIME=35 2; LIFETIME-POS=L P2	POS TARG 0,1,9	1100 Secs (1100 Secs) [==>]	[2]
10	G130M/122 2 FP=2 (COS.sp.140 2475)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1222 A	FP-POS=2; BUFFER-TIME=35 2; LIFETIME-POS=L P2	POS TARG 0,1,9	1100 Secs (1100 Secs) [==>]	[2]
11	G130M/122 2 FP=3 (COS.sp.140 2475)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1222 A	FP-POS=3; BUFFER-TIME=35 2; LIFETIME-POS=L P2	POS TARG 0,1,9	1100 Secs (1100 Secs) [==>]	[3]
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13	Return to no minal HV va lues: 163/16 3	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR ELHVADJPROP; QESIPARM ENDC TSB 163; QESIPARM ENDC TSA 163	39 Secs (39 Secs) [==>]	[3]
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Mon Apr 06 17:01:31 GMT 2020

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Proposal 16106 - G130M/1291 and G160M/1623 (02) - Initial Test of COS/FUV Spectrum Placement at Lifetime Position 5

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5	Move Aperture to potential location (0)	NONE	COS, ALIGN/APER		XAPER=-40; YAPER=0			0.0 Secs (0 Secs) [==>]	[1]	
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Proposal 16106 - G130M/1291 and G160M/1623 (02) - Initial Test of COS/FUV Spectrum Placement at Lifetime Position 5

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9	G160M/162 3 FP=1 (COS.sp.140 2477)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G160M 1623 A	FP-POS=1; BUFFER-TIME=68 2; LIFETIME-POS=L P2	POS TARG 0,1,9	1000 Secs (1000 Secs) [==>]	[2]
10	G160M/162 3 FP=2 (COS.sp.140 2477)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G160M 1623 A	FP-POS=2; BUFFER-TIME=68 2; LIFETIME-POS=L P2	POS TARG 0,1,9	1000 Secs (1000 Secs) [==>]	[2]
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