



## 14875 - Verification of Aperture and FUV Spectrum Placement for COS at LP4

Cycle: 24, Proposal Category: CAL/COS

(Availability Mode: RESTRICTED)

### INVESTIGATORS

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### 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 NONE	COS COS/FUV COS/NUV	2	07-Dec-2016 21:02:18.0	yes

2 Total Orbits Used

### ABSTRACT

This proposal will determine the exact spacecraft pointing offset and the aperture offsets needed for the 4th COS FUV lifetime position (LP4). We will shift the COS FUV spectra by approximately -2.52 arcseconds from LP3 in the cross-dispersion direction, then scan the aperture across the target.

## OBSERVING DESCRIPTION

This program will place a G130M/1309/FP-POS=3 spectrum of WD0308-565 at the new lifetime position (LP4; approximately -2.52" from LP3 as defined by the SIAF) and take a series of exposures while moving the PSA aperture across the target in both the dispersion and cross-dispersion direction. This data will be used to (1) verify that the spectrum falls at the desired location on the detector; (2) measure the throughput as a function of aperture position; and (3) refine the SIAF values for LP4. The aperture is moved in the preferred direction (positive in the cross-dispersion direction and negative in the dispersion direction) during the scans.

This program is similar to Program 13634/LENA1, which performed the same function for LP3.

The science exposures in this program use the Optional Parameter LIFETIME-POS=LP4 in order to use the best-guess pointing, aperture position, and detector high voltage values for LP4. Offsets will be made relative to the nominal aperture position.

The SIAF to be used includes the following LP4 positions (PR 86315):

AP	V2	V3
-----	-----	-----
LFBOA4	229.1073	-241.0320
LFPSA4	229.1073	-241.0320
LAPTFBOAF4	219.7331	-250.4062
LAPTFPSAF4	238.4815	-231.6578

The FSW patchable constant table pcmech\_ApMXDispPosition should use the following LP4 positions (PR 86334):

```
{ 234, 126 }, /* PSA_LP4 */  
{ -45, -153 }, /* BOA_LP4 */  
{ -45, -153 }, /* FCA_LP4 */  
{ 234, 126 }, /* WCA_LP4 */
```

The FSW patchable constant table pcmech\_OSM\_position\_table should use the following focus position for G130M/1309:

{0, 1309, 7991, 170, 290, 352, 392, -147, 898, 206, 126, 2218, 6857},

The HV values for G130M/1309 should be 163/163 for Segments A/B.

The FLASH=S0027D025 Optional Parameter has been added to all exposures so that the wavecal lamp is kept on for the entire exposure. The wavecal data will be used to investigate the effect of the LP2 holes on the G130M/1309 LP4 wavecal data.

Analysis of the data from this program will provide the values needed to update the HST pointing and aperture block position in the SIAF file, COS FSW, and ground system. These values are needed before executing the LP4 enabling programs. The aperture position will be determined to the nearest aperture step. The pointing will be located to within 0.05 arcseconds in the dispersion and cross-dispersion directions.

In order to meet the goal of moving to LP4 in July 2017, we would like this program to execute before January 5, 2017.

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Thu Dec 08 02:02:21 GMT 2016

<b>Visit</b>	<p><b>Proposal 14875, Visit 01 (01), implementation</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Scientific Instruments: COS, COS/FUV, COS/NUV</p> <p>Special Requirements: SCHED 40%</p> <p><i>Comments: Adopt pattern of aperture motions in motor steps relative to new center of:</i>                  -29 -23 -18 -14 -10 -6 -3 0 +3 +6 +10 +14 +18 +23 +29  <i>equivalent shift in arc-sec for these motions is approximately (assuming 21 steps/arcsec):</i>                  -1.38 -1.10 -0.86 -0.67 -0.48 -0.29 -0.14 0.00 +0.14 +0.29 +0.48 +0.67 +0.86 +1.10 +1.38</p> <p><i>The dispersion and cross-dispersion scans are each in their own Non-Interruptible Sequence in order to complete the scan as quickly as possible and minimize drift during each scan.</i></p>																																			
	<p>(Visit 01 (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.</p>																																			
<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		
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<p><i>Comments: Position and proper motions from the Third U.S. Naval Observatory CCD Astrograph Catalog (UCAC3) Zacharias et al. 2009</i>                  Extended=NO</p>																																				

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#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
Exposures	1	MIRRORA - BOA ACQ /IMAGE (COS.ta.844 627)	(1) WD0308-565	COS/NUV, ACQ/IMAGE, BOA	MIRRORA		Sequence 1-34 Non-Int in Visit 01 (01)	43 Secs (43 Secs) [==>]	[1]	
	<i>Comments: ACQ done at LP1</i>									
	<i>SN=60 in 43 seconds, brightest pixel=11.8 cts/s</i>									
	2	G130M/130 9 exposure at nominal aperture position (COS.sp.844 612)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5		Sequence 1-34 Non-Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[1]
	<i>Comments: S/N of 5.9 per resel in 25 seconds</i>									
	<i>We expect ~2760 FUV target counts.</i>									
	3	aperture XD XAPER=-29 (0)	NONE	COS, ALIGN/APER		XAPER=-29; YAPER=0		Sequence 1-34 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[1]
	<i>Comments: Cross-dispersion aperture shift of -29 steps</i>									
4	G130M/130 9 Exposure (COS.sp.844 612)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5		Sequence 1-34 Non-Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[1]	
5	aperture XD XAPER=-23 (0)	NONE	COS, ALIGN/APER		XAPER=-23; YAPER=0		Sequence 1-34 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[1]	
<i>Comments: Cross-dispersion aperture shift of -23 steps</i>										
6	G130M/130 9 Exposure (COS.sp.844 612)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5		Sequence 1-34 Non-Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[1]	
7	aperture XD XAPER=-18 (0)	NONE	COS, ALIGN/APER		XAPER=-18; YAPER=0		Sequence 1-34 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[1]	
<i>Comments: Cross-dispersion aperture shift of -18 steps</i>										
8	G130M/130 9 Exposure (COS.sp.844 612)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5		Sequence 1-34 Non-Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[1]	

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9	aperture XD NONE XAPER=-14 (0)	COS, ALIGN/APER		XAPER=-14; YAPER=0	Sequence 1-34 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[1]
<i>Comments: Cross-dispersion aperture shift of -14 steps</i>							
10	G130M/130 (1) WD0308-565 9 Exposure (COS.sp.844 612)	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 1-34 Non-Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[1]
11	aperture XD NONE XAPER=-10 (0)	COS, ALIGN/APER		XAPER=-10; YAPER=0	Sequence 1-34 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[1]
<i>Comments: Cross-dispersion aperture shift of -10 steps</i>							
12	G130M/130 (1) WD0308-565 9 Exposure (COS.sp.844 612)	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 1-34 Non-Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[1]
13	aperture XD NONE XAPER=-6 (0)	COS, ALIGN/APER		XAPER=-6; YAPER=0	Sequence 1-34 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[1]
<i>Comments: Cross-dispersion aperture shift of -6 steps</i>							
14	G130M/130 (1) WD0308-565 9 Exposure (COS.sp.844 612)	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 1-34 Non-Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[1]
15	aperture XD NONE XAPER=-3 (0)	COS, ALIGN/APER		XAPER=-3; YAPER=0	Sequence 1-34 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[1]
<i>Comments: Cross-dispersion aperture shift of -3 steps</i>							
16	G130M/130 (1) WD0308-565 9 Exposure (COS.sp.844 612)	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 1-34 Non-Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[1]
17	aperture XD NONE XAPER=0 (0)	COS, ALIGN/APER		XAPER=0; YAPER=0	Sequence 1-34 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[1]
<i>Comments: Cross-dispersion aperture shift of 0 steps</i>							

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18	G130M/130 9 Exposure (COS.sp.844 612)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 1-34 Non-Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[1]
19	aperture XD XAPER=+3 (0)	NONE	COS, ALIGN/APER		XAPER=+3; YAPER=0	Sequence 1-34 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[1]
<i>Comments: Cross-dispersion aperture shift of +3 steps</i>								
20	G130M/130 9 Exposure (COS.sp.844 612)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 1-34 Non-Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[1]
21	aperture XD XAPER=+6 (0)	NONE	COS, ALIGN/APER		XAPER=+6; YAPER=0	Sequence 1-34 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[1]
<i>Comments: Cross-dispersion aperture shift of +6 steps</i>								
22	G130M/130 9 Exposure (COS.sp.844 612)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 1-34 Non-Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[1]
23	aperture XD XAPER=+10 0 (0)	NONE	COS, ALIGN/APER		XAPER=+10; YAPER=0	Sequence 1-34 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[1]
<i>Comments: Cross-dispersion aperture shift of +10 steps</i>								
24	G130M/130 9 Exposure (COS.sp.844 612)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 1-34 Non-Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[1]
25	aperture XD XAPER=+14 4 (0)	NONE	COS, ALIGN/APER		XAPER=+14; YAPER=0	Sequence 1-34 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[1]
<i>Comments: Cross-dispersion aperture shift of +14 steps</i>								
26	G130M/130 9 Exposure (COS.sp.844 612)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 1-34 Non-Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[1]

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27	aperture XD NONE XAPER=+1 8 (0)	COS, ALIGN/APER		XAPER=+18; YAPER=0	Sequence 1-34 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[1]
<i>Comments: Cross-dispersion aperture shift of +18 steps</i>							
28	G130M/130 (1) WD0308-565 9 Exposure (COS.sp.844 612)	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 1-34 Non-Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[1]
29	aperture XD NONE XAPER=+2 3 (0)	COS, ALIGN/APER		XAPER=+23; YAPER=0	Sequence 1-34 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[1]
<i>Comments: Cross-dispersion aperture shift of +23 steps</i>							
30	G130M/130 (1) WD0308-565 9 Exposure (COS.sp.844 612)	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 1-34 Non-Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[1]
31	aperture XD NONE XAPER=+2 9 (0)	COS, ALIGN/APER		XAPER=+29; YAPER=0	Sequence 1-34 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[1]
<i>Comments: Cross-dispersion aperture shift of +29 steps</i>							
32	G130M/130 (1) WD0308-565 9 Exposure (COS.sp.844 612)	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 1-34 Non-Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[1]
33	aperture default position (0)	COS, ALIGN/APER		XAPER=0; YAPER=0	Sequence 1-34 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[1]
34	G130M/130 (1) WD0308-565 9 Exposure (COS.sp.844 612)	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 1-34 Non-Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[1]
<i>Comments: This exposure ends orbit number 1, and is the last exposure in the cross-dispersion aperture scan.</i>							



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35	G130M/130 9 Exposure (COS.sp.844 612)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 35-67 Non -Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[2]
<i>Comments: This exposure starts orbit number 2, and begins the dispersion direction aperture scan.</i>								
36	aperture D YAPER=+2 9 (0)	NONE	COS, ALIGN/APER		XAPER=0; YAPER=+29	Sequence 35-67 Non -Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[2]
<i>Comments: Dispersion aperture shift of +29 steps</i>								
37	G130M/130 9 Exposure (COS.sp.844 612)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 35-67 Non -Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[2]
38	aperture D YAPER=+2 3 (0)	NONE	COS, ALIGN/APER		XAPER=0; YAPER=+23	Sequence 35-67 Non -Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[2]
<i>Comments: Dispersion aperture shift of +23 steps</i>								
39	G130M/130 9 Exposure (COS.sp.844 612)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 35-67 Non -Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[2]
40	aperture D YAPER=+1 8 (0)	NONE	COS, ALIGN/APER		XAPER=0; YAPER=+18	Sequence 35-67 Non -Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[2]
<i>Comments: Dispersion aperture shift of +18 steps</i>								
41	G130M/130 9 Exposure (COS.sp.844 612)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 35-67 Non -Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[2]
42	aperture D YAPER=+1 4 (0)	NONE	COS, ALIGN/APER		XAPER=0; YAPER=+14	Sequence 35-67 Non -Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[2]
<i>Comments: Dispersion aperture shift of +14 steps</i>								

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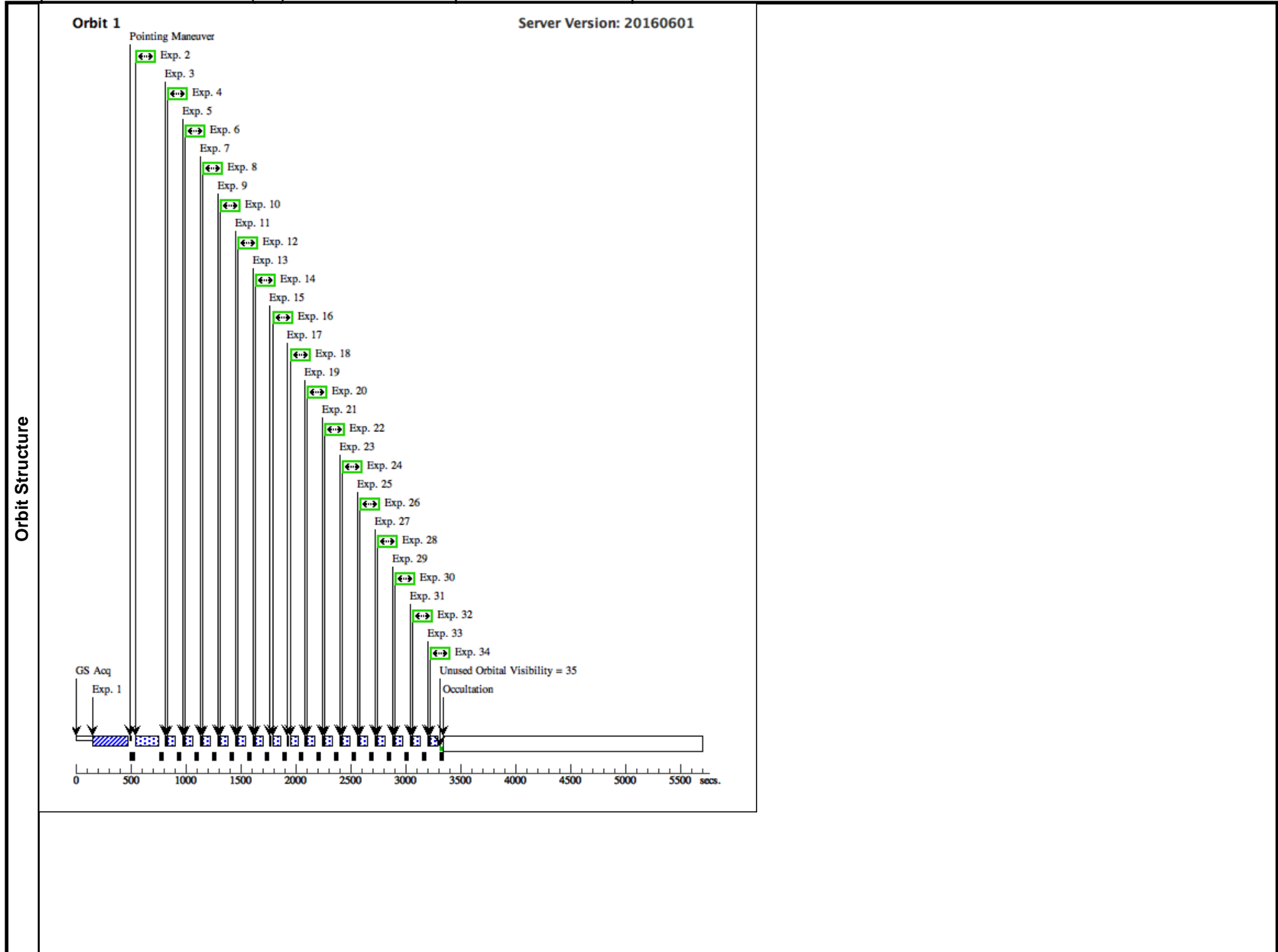
43	G130M/130 9 Exposure (COS.sp.844 612)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 35-67 Non -Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[2]
44	aperture D YAPER=+1 0 (0)	NONE	COS, ALIGN/APER		XAPER=0; YAPER=+10	Sequence 35-67 Non -Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[2]
<i>Comments: Dispersion aperture shift of +10 steps</i>								
45	G130M/130 9 Exposure (COS.sp.844 612)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 35-67 Non -Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[2]
46	aperture D YAPER=+6 (0)	NONE	COS, ALIGN/APER		XAPER=0; YAPER=+6	Sequence 35-67 Non -Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[2]
<i>Comments: Dispersion aperture shift of +6 steps</i>								
47	G130M/130 9 Exposure (COS.sp.844 612)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 35-67 Non -Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[2]
48	aperture D YAPER=+3 (0)	NONE	COS, ALIGN/APER		XAPER=0; YAPER=+3	Sequence 35-67 Non -Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[2]
<i>Comments: Dispersion aperture shift of +3 steps</i>								
49	G130M/130 9 Exposure (COS.sp.844 612)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 35-67 Non -Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[2]
50	aperture D YAPER=0 (0)	NONE	COS, ALIGN/APER		XAPER=0; YAPER=0	Sequence 35-67 Non -Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[2]
<i>Comments: Dispersion aperture shift of 0 steps</i>								
51	G130M/130 9 Exposure (COS.sp.844 612)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 35-67 Non -Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[2]

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52	aperture D NONE YAPER=-3 (0)	COS, ALIGN/APER		XAPER=0; YAPER=-3	Sequence 35-67 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[2]
<i>Comments: Dispersion aperture shift of -3 steps</i>							
53	G130M/130 (1) WD0308-565 9 Exposure (COS.sp.844 612)	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 35-67 Non-Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[2]
54	aperture D NONE YAPER=-6 (0)	COS, ALIGN/APER		XAPER=0; YAPER=-6	Sequence 35-67 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[2]
<i>Comments: Dispersion aperture shift of -6 steps</i>							
55	G130M/130 (1) WD0308-565 9 Exposure (COS.sp.844 612)	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 35-67 Non-Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[2]
56	aperture D NONE YAPER=-10 (0)	COS, ALIGN/APER		XAPER=0; YAPER=-10	Sequence 35-67 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[2]
<i>Comments: Dispersion aperture shift of -10 steps</i>							
57	G130M/130 (1) WD0308-565 9 Exposure (COS.sp.844 612)	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 35-67 Non-Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[2]
58	aperture D NONE YAPER=-14 (0)	COS, ALIGN/APER		XAPER=0; YAPER=-14	Sequence 35-67 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[2]
<i>Comments: Dispersion aperture shift of -14 steps</i>							
59	G130M/130 (1) WD0308-565 9 Exposure (COS.sp.844 612)	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 35-67 Non-Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[2]
60	aperture D NONE YAPER=-18 (0)	COS, ALIGN/APER		XAPER=0; YAPER=-18	Sequence 35-67 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[2]
<i>Comments: Dispersion aperture shift of -18 steps</i>							

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61	G130M/130 9 Exposure (COS.sp.844 612)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 35-67 Non -Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[2]
62	aperture D YAPER=-23 (0)	NONE	COS, ALIGN/APER		XAPER=0; YAPER=-23	Sequence 35-67 Non -Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[2]
<i>Comments: Dispersion aperture shift of -23 steps</i>								
63	G130M/130 9 Exposure (COS.sp.844 612)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 35-67 Non -Int in Visit 01 (01)	25 Secs (25 Secs) [==>]	[2]
64	aperture D YAPER=-29 (0)	NONE	COS, ALIGN/APER		XAPER=0; YAPER=-29	Sequence 35-67 Non -Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[2]
<i>Comments: Dispersion aperture shift of -29 steps</i>								
65	G130M/130 9 Exposure (COS.sp.844 612)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 35-67 Non -Int in Visit 01 (01)	15 Secs (15 Secs) [==>]	[2]
66	Aperture def ault position (0)	NONE	COS, ALIGN/APER		XAPER=0; YAPER=0	Sequence 35-67 Non -Int in Visit 01 (01)	0.0 Secs (0 Secs) [==>]	[2]
67	G130M/130 9 Exposure (COS.sp.844 612)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=20 0; FP-POS=3; LIFETIME-POS=L P4; FLASH=S0027D02 5	Sequence 35-67 Non -Int in Visit 01 (01)	15 Secs (15 Secs) [==>]	[2]
<i>Comments: Back to nominal LP4 position. This is the last exposure in the dispersion direction aperture scan.</i>								



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