13634 - Verification of Aperture and FUV Spectrum Placement for COS at LP3 (LENA1)

Cycle: 21, Proposal Category: CAL/COS

(Availability Mode: RESTRICTED)

INVESTIGATORS

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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) WD0308-565 DARK NONE	COS COS/FUV COS/NUV S/C	3	24-Jun-2014 21:00:38.0	yes

3 Total Orbits Used

ABSTRACT

This proposal will determine the exact spacecraft pointing offset and the aperture offsets needed for the 3rd COS FUV lifetime position (LP3). The intent is to shift COS FUV spectra by approximately -2.5 arcseconds in the cross-dispersion direction to avoid the heavily gain sagged region around LP1. All FUV exposures will use the ALTERNATE lifetime position to place the spectra at the LP3 location on the detector.

OBSERVING DESCRIPTION

This program consists of a single visit that will obtain data for two tasks:

1). We will place a G130M/1309/FP-POS=3 spectrum of WD0308-565 at the new lifetime position (LP3; approximately -2.5" from LP1 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 verify that the spectrum falls at the desired location on the detector and to measure the throughput as a function of aperture position, and to refine the SIAF values for LP3.

2) We will obtain G160M/1600 and G140L/1280 spectra of the same target at the LP3 position in order to estimate the WCA to PSA offset on Segment A for use in LENA3.

This program will use a special HV Table with the following changes to the normal HV/Aperture table:

CENWAVE	Lifetime Position	HVA,HVB
1309	Alternate (LP3)	167,163
1600	Alternate (LP3)	167,163
1280	Alternate (LP3)	167,163

The FSW aperture table to use for this program (which is the same as the one to be used in LENA4) is:

```
const SHORT pcmech_ApMXDispPosition[TA_NUM_APERTURES][MIE_NUM_DETECTORS] =
{
 /*  FUV   NUV  */
 /*  ---   ---  */
   {  53,  126 }, /* PSA_B, best primary science aperture position */
   {-226, -153 }, /* BOA_B, best bright object aperture position */
   {-226, -153 }, /* FCA_B, best flat-field cal aperture position */
```

```
   {  53,  126 }, /* WCA_B, best wavecal aperture position */
   { 179,  126 }, /* PSA_A, alternate primary science aperture position */
   {-100, -153 }, /* BOA_A, alternate bright object aperture position */
   {-100, -153 }, /* FCA_A, alternate flat-field cal aperture position */
   { 179,  126 }, /* WCA_A, alternate wavecal aperture position */
   { 126,  126 }, /* PSA_O, original primary science aperture position */
   {-153, -153 }, /* BOA_O, original bright object aperture position */
   {-153, -153 }, /* FCA_O, original flat-field cal aperture position */
   { 126,  126 }  /* WCA_O, original wavecal aperture position */
};
```

This program also requires a special SIAF file to move the pointing of the telescope -2.523 arcseconds from the LP1 position for the FUV ALTERNATE entries. This is a move of [-1.7866", -1.7846"] in [V2,V3] - see PR 78255. The lines to change are:

LFBOAA 2014.188:00:00:00 230.9384 -239.2996 0.022600 0.094300 135.0 45.0
LFPSAA 2014.188:00:00:00 230.9384 -239.2996 0.022600 0.094300 135.0 45.0
LAPTFBOAFA 2014.188:00:00:00 221.5642 -248.6738 0.022600 0.094300 135.0 45.0
LAPTFPSAFA 2014.188:00:00:00 240.3126 -229.9254 0.022600 0.094300 135.0 45.0

At the end of the visit, the HV is ramped down to HVLOW.

ADDITIONAL COMMENTS

This program should execute only after ALTERNATE is defined with our initial best guess for the parameters to use at LP3 (see the table above), after LENA4 has executed, and before July 28, 2014. LENA1 must be completed at least 3 weeks before Visit 01 of LENA3 executes. The new HV management system will be used for this program.

Analysis of the data from this program will result in 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 LENA3. 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. The WCA-PSA distance will be determined to within 2 pixels.

Visit

Proposal 13634, Visit 01 (01), implementation Wed Jun 25 01:00:42 GMT 2014

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, S/C, COS/FUV, COS

Special Requirements: SCHED 100%

Comments: This visit uses the same relative aperture motions as in Program 12795/FENA2. However, in this program, no cross-dispersion offset motion is specified explicitly since that offset will be provided by the use of the LIFE-POS=ALTERNATE Optional Parameter.

Adopt pattern of aperture motions in motor steps relative to new center of:
-29 -23 -18 -14 -10 -6 0 +6 +10 +14 +18 +23 +29
equivalent shift in arc-sec for these motions is
-1.38 -1.10 -0.86 -0.67 -0.48 -0.29 0.00 +0.29 +0.48 +0.67 +0.86 +1.10 +1.38

Diagnostics

(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.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	WD0308-565 Alt Name1: GSC08495-00951 Alt Name2: 3UC068-006526	RA: 03 09 47.9200 (47.4496667d) Dec: -56 23 49.41 (-56.39706d) Equinox: J2000	Proper Motion RA: 150.6 mas/yr Proper Motion Dec: 64.3 mas/yr Epoch of Position: 2000 Radial Velocity: -68 km/sec	V=14.07+/-0.02	Reference Frame: ICRS

Comments: Position and proper motions from the Third U.S. Naval Observatory CCD Astrograph Catalog (UCAC3) Zacharias et al. 2009

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	MIRRORA - BOA ACQ /IMAGE (COS.ta.609 053)	(1) WD0308-565	COS/NUV, ACQ/IMAGE, BOA	MIRRORA			Sequence 1-30 Non-Int in Visit 01 (01)	43 Secs (43 Secs) *[==>]*	***[1]***
	Comments: ACQ done at LP1 *SN=60 in 43 seconds, brightest pixel=11.8 cts/s*								
2	G130M/1309 exposure at nominal aperture position (COS.sp.609 054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=200; FP-POS=3; LIFETIME-POS=ALTERNATE; FLASH=S0027D025		Sequence 1-30 Non-Int in Visit 01 (01)	25 Secs (25 Secs) *[==>]*	***[1]***
	Comments: S/N of 6.5 per resel in 25 seconds *This exposure will provide LENA3 with an initial estimate of the WCA to PSA offset on FUVA for G130M. We expect ~3300 FUVA target counts, and we keep the lamp on for the entire exposure to get a good measurement of the WCA location.*								
3	aperture XD XAPER=-29 (0)	NONE	COS, ALIGN/APER		XAPER=-29; YAPER=0		Sequence 1-30 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: Cross-dispersion aperture shift of -29 steps								
4	G130M/1309 Exposure (COS.sp.609 054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=200; FP-POS=3; LIFETIME-POS=ALTERNATE		Sequence 1-30 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 1-30 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: Cross-dispersion aperture shift of -23 steps								
6	G130M/1309 Exposure (COS.sp.609 054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=200; FP-POS=3; LIFETIME-POS=ALTERNATE		Sequence 1-30 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 1-30 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: Cross-dispersion aperture shift of -18 steps								
8	G130M/1309 Exposure (COS.sp.609 054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=200; FP-POS=3; LIFETIME-POS=ALTERNATE		Sequence 1-30 Non-Int in Visit 01 (01)	25 Secs (25 Secs) *[==>]*	***[1]***
9	aperture XD XAPER=-14 (0)	NONE	COS, ALIGN/APER		XAPER=-14; YAPER=0		Sequence 1-30 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: Cross-dispersion aperture shift of -14 steps								

10	G130M/1309 Exposure (COS.sp.609054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=200; FP-POS=3; LIFETIME-POS=ALTERNATE	Sequence 1-30 Non-Int in Visit 01 (01)	25 Secs (25 Secs) *[==>]*	***[1]***
11	aperture XD XAPER=-10 (0)	NONE	COS, ALIGN/APER		XAPER=-10; YAPER=0	Sequence 1-30 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	***[1]***
Comments: Cross-dispersion aperture shift of -10 steps								
12	G130M/1309 Exposure (COS.sp.609054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=200; FP-POS=3; LIFETIME-POS=ALTERNATE	Sequence 1-30 Non-Int in Visit 01 (01)	25 Secs (25 Secs) *[==>]*	***[1]***
13	aperture XD XAPER=-6 (0)	NONE	COS, ALIGN/APER		XAPER=-6; YAPER=0	Sequence 1-30 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	***[1]***
Comments: Cross-dispersion aperture shift of -6 steps								
14	G130M/1309 Exposure (COS.sp.609054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=200; FP-POS=3; LIFETIME-POS=ALTERNATE	Sequence 1-30 Non-Int in Visit 01 (01)	25 Secs (25 Secs) *[==>]*	***[1]***
15	aperture XD XAPER=0 (0)	NONE	COS, ALIGN/APER		XAPER=0; YAPER=0	Sequence 1-30 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	***[1]***
Comments: Cross-dispersion aperture shift of 0 steps								
16	G130M/1309 Exposure (COS.sp.609054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=200; FP-POS=3; LIFETIME-POS=ALTERNATE	Sequence 1-30 Non-Int in Visit 01 (01)	25 Secs (25 Secs) *[==>]*	***[1]***
17	aperture XD XAPER=+6 (0)	NONE	COS, ALIGN/APER		XAPER=+6; YAPER=0	Sequence 1-30 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	***[1]***
Comments: Cross-dispersion aperture shift of +6 steps								
18	G130M/1309 Exposure (COS.sp.609054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=200; FP-POS=3; LIFETIME-POS=ALTERNATE	Sequence 1-30 Non-Int in Visit 01 (01)	25 Secs (25 Secs) *[==>]*	***[1]***
19	aperture XD XAPER=+10 (0)	NONE	COS, ALIGN/APER		XAPER=+10; YAPER=0	Sequence 1-30 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	***[1]***
Comments: Cross-dispersion aperture shift of +10 steps								
20	G130M/1309 Exposure (COS.sp.609054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=200; FP-POS=3; LIFETIME-POS=ALTERNATE	Sequence 1-30 Non-Int in Visit 01 (01)	25 Secs (25 Secs) *[==>]*	***[1]***

21	aperture XD XAPER=+14 (0)	NONE	COS, ALIGN/APER		XAPER=+14; YAPER=0	Sequence 1-30 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	***[1]***
Comments: Cross-dispersion aperture shift of +14 steps								
22	G130M/1309 Exposure (COS.sp.609054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=200; FP-POS=3; LIFETIME-POS=ALTERNATE	Sequence 1-30 Non-Int in Visit 01 (01)	25 Secs (25 Secs) *[==>]*	***[1]***
23	aperture XD XAPER=+18 (0)	NONE	COS, ALIGN/APER		XAPER=+18; YAPER=0	Sequence 1-30 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	***[1]***
Comments: Cross-dispersion aperture shift of +18 steps								
24	G130M/1309 Exposure (COS.sp.609054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=200; FP-POS=3; LIFETIME-POS=ALTERNATE	Sequence 1-30 Non-Int in Visit 01 (01)	25 Secs (25 Secs) *[==>]*	***[1]***
25	aperture XD XAPER=+23 (0)	NONE	COS, ALIGN/APER		XAPER=+23; YAPER=0	Sequence 1-30 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	***[1]***
Comments: Cross-dispersion aperture shift of +23 steps								
26	G130M/1309 Exposure (COS.sp.609054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=200; FP-POS=3; LIFETIME-POS=ALTERNATE	Sequence 1-30 Non-Int in Visit 01 (01)	25 Secs (25 Secs) *[==>]*	***[1]***
27	aperture XD XAPER=+29 (0)	NONE	COS, ALIGN/APER		XAPER=+29; YAPER=0	Sequence 1-30 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	***[1]***
Comments: Cross-dispersion aperture shift of +29 steps								
28	G130M/1309 Exposure (COS.sp.609054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=200; FP-POS=3; LIFETIME-POS=ALTERNATE	Sequence 1-30 Non-Int in Visit 01 (01)	25 Secs (25 Secs) *[==>]*	***[1]***
29	aperture default position (0)	NONE	COS, ALIGN/APER		XAPER=0; YAPER=0	Sequence 1-30 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	***[1]***
30	G130M/1309 Exposure (COS.sp.609054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=200; FP-POS=3; LIFETIME-POS=ALTERNATE	Sequence 1-30 Non-Int in Visit 01 (01)	25 Secs (25 Secs) *[==>]*	***[1]***
Comments: This exposure ends orbit number 1, and is the last exposure in the cross-dispersion aperture scan.								

31	G130M/1309 Exposure (COS.sp.609054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=200; FP-POS=3; LIFETIME-POS=ALTERNATE	Sequence 31-58 Non-Int in Visit 01 (01)	25 Secs (25 Secs) *[==>]*	***[2]***
Comments: This exposure starts orbit number 2, and begins the dispersion direction aperture scan.								
32	aperture D YAPER=+29 (0)	NONE	COS, ALIGN/APER		XAPER=0; YAPER=+29	Sequence 31-58 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	***[2]***
Comments: Dispersion aperture shift of +29 steps								
33	G130M/1309 Exposure (COS.sp.609054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=200; FP-POS=3; LIFETIME-POS=ALTERNATE	Sequence 31-58 Non-Int in Visit 01 (01)	25 Secs (25 Secs) *[==>]*	***[2]***
34	aperture D YAPER=+23 (0)	NONE	COS, ALIGN/APER		XAPER=0; YAPER=+23	Sequence 31-58 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	***[2]***
Comments: Dispersion aperture shift of +23 steps								
35	G130M/1309 Exposure (COS.sp.609054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=200; FP-POS=3; LIFETIME-POS=ALTERNATE	Sequence 31-58 Non-Int in Visit 01 (01)	25 Secs (25 Secs) *[==>]*	***[2]***
36	aperture D YAPER=+18 (0)	NONE	COS, ALIGN/APER		XAPER=0; YAPER=+18	Sequence 31-58 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	***[2]***
Comments: Dispersion aperture shift of +18 steps								
37	G130M/1309 Exposure (COS.sp.609054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=200; FP-POS=3; LIFETIME-POS=ALTERNATE	Sequence 31-58 Non-Int in Visit 01 (01)	25 Secs (25 Secs) *[==>]*	***[2]***
38	aperture D YAPER=+14 (0)	NONE	COS, ALIGN/APER		XAPER=0; YAPER=+14	Sequence 31-58 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	***[2]***
Comments: Dispersion aperture shift of +14 steps								
39	G130M/1309 Exposure (COS.sp.609054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=200; FP-POS=3; LIFETIME-POS=ALTERNATE	Sequence 31-58 Non-Int in Visit 01 (01)	25 Secs (25 Secs) *[==>]*	***[2]***
40	aperture D YAPER=+10 (0)	NONE	COS, ALIGN/APER		XAPER=0; YAPER=+10	Sequence 31-58 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	***[2]***
Comments: Dispersion aperture shift of +10 steps								

41	G130M/1309 Exposure (COS.sp.609054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=200; FP-POS=3; LIFETIME-POS=ALTERNATE	Sequence 31-58 Non-Int in Visit 01 (01)	25 Secs (25 Secs) *[==>]*	***[2]***
42	aperture D YAPER=+6 (0)	NONE	COS, ALIGN/APER		XAPER=0; YAPER=+6	Sequence 31-58 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	***[2]***
Comments: Dispersion aperture shift of +6 steps								
43	G130M/1309 Exposure (COS.sp.609054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=200; FP-POS=3; LIFETIME-POS=ALTERNATE	Sequence 31-58 Non-Int in Visit 01 (01)	25 Secs (25 Secs) *[==>]*	***[2]***
44	aperture D YAPER=0 (0)	NONE	COS, ALIGN/APER		XAPER=0; YAPER=0	Sequence 31-58 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	***[2]***
Comments: Dispersion aperture shift of 0 steps								
45	G130M/1309 Exposure (COS.sp.609054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=200; FP-POS=3; LIFETIME-POS=ALTERNATE	Sequence 31-58 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 31-58 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	***[2]***
Comments: Dispersion aperture shift of -6 steps								
47	G130M/1309 Exposure (COS.sp.609054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=200; FP-POS=3; LIFETIME-POS=ALTERNATE	Sequence 31-58 Non-Int in Visit 01 (01)	25 Secs (25 Secs) *[==>]*	***[2]***
48	aperture D YAPER=-10 (0)	NONE	COS, ALIGN/APER		XAPER=0; YAPER=-10	Sequence 31-58 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	***[2]***
Comments: Dispersion aperture shift of -10 steps								
49	G130M/1309 Exposure (COS.sp.609054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=200; FP-POS=3; LIFETIME-POS=ALTERNATE	Sequence 31-58 Non-Int in Visit 01 (01)	25 Secs (25 Secs) *[==>]*	***[2]***
50	aperture D YAPER=-14 (0)	NONE	COS, ALIGN/APER		XAPER=0; YAPER=-14	Sequence 31-58 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	***[2]***
Comments: Dispersion aperture shift of -14 steps								
51	G130M/1309 Exposure (COS.sp.609054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=200; FP-POS=3; LIFETIME-POS=ALTERNATE	Sequence 31-58 Non-Int in Visit 01 (01)	25 Secs (25 Secs) *[==>]*	***[2]***

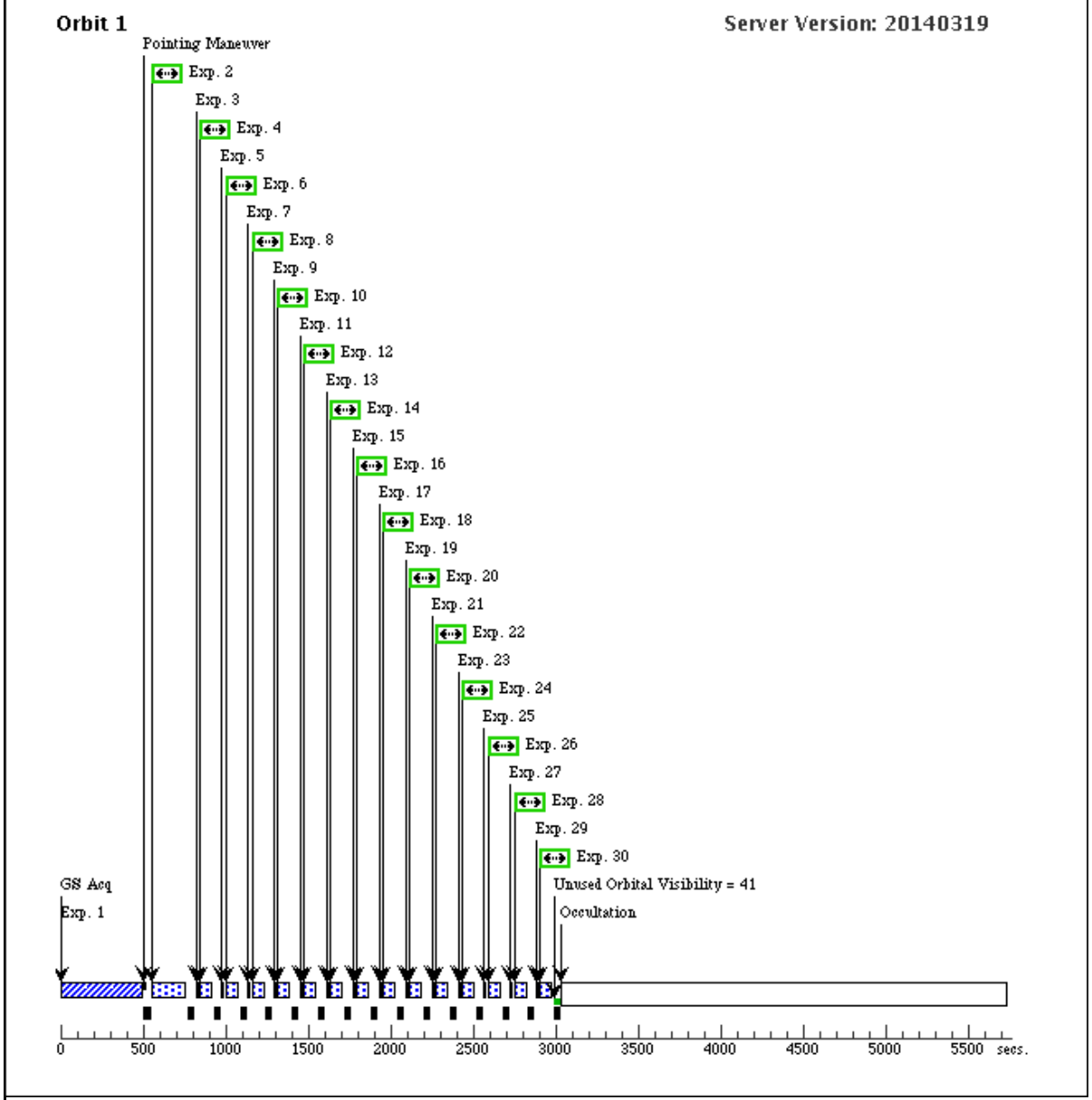
52	aperture D YAPER=-18 (0)	NONE	COS, ALIGN/APER		XAPER=0; YAPER=-18	Sequence 31-58 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	**[2]**
Comments: Dispersion aperture shift of -18 steps								
53	G130M/1309 Exposure (COS.sp.609054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=2000; FP-POS=3; LIFETIME-POS=ALTERNATE	Sequence 31-58 Non-Int in Visit 01 (01)	25 Secs (25 Secs) *[==>]*	**[2]**
54	aperture D YAPER=-23 (0)	NONE	COS, ALIGN/APER		XAPER=0; YAPER=-23	Sequence 31-58 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	**[2]**
Comments: Dispersion aperture shift of -23 steps								
55	G130M/1309 Exposure (COS.sp.609054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=2000; FP-POS=3; LIFETIME-POS=ALTERNATE	Sequence 31-58 Non-Int in Visit 01 (01)	25 Secs (25 Secs) *[==>]*	**[2]**
56	aperture D YAPER=-29 (0)	NONE	COS, ALIGN/APER		XAPER=0; YAPER=-29	Sequence 31-58 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	**[2]**
Comments: Dispersion aperture shift of -29 steps								
57	G130M/1309 Exposure (COS.sp.609054)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=2000; FP-POS=3; LIFETIME-POS=ALTERNATE	Sequence 31-58 Non-Int in Visit 01 (01)	15 Secs (15 Secs) *[==>]*	**[2]**
58	Aperture default position (0)	NONE	COS, ALIGN/APER		XAPER=0; YAPER=0	Sequence 31-58 Non-Int in Visit 01 (01)	0.0 Secs (0 Secs) *[==>]*	**[2]**
Comments: Back to nominal LP3 position. This is the last exposure in the dispersion direction aperture scan.								
59	G160M/1600 for PSA to WCA offset measurement (COS.sp.609599)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G160M 1600 A	BUFFER-TIME=4000; FP-POS=3; LIFETIME-POS=ALTERNATE; FLASH=S0150D020		170 Secs (170 Secs) *[==>]*	**[2]**
Comments: Exposure to measure G160M WCA to PSA offset for LENA3. Expect 1100 counts								
60	G140L/1280 for PSA to WCA offset measurement (COS.sp.609600)	(1) WD0308-565	COS/FUV, TIME-TAG, PSA	G140L 1280 A	BUFFER-TIME=2500; FP-POS=3; LIFETIME-POS=ALTERNATE; FLASH=S0022D020		20 Secs (20 Secs) *[==>]*	**[2]**
Comments: Exposure to measure G140L WCA to PSA offset for LENA3. Expect 2400 counts								

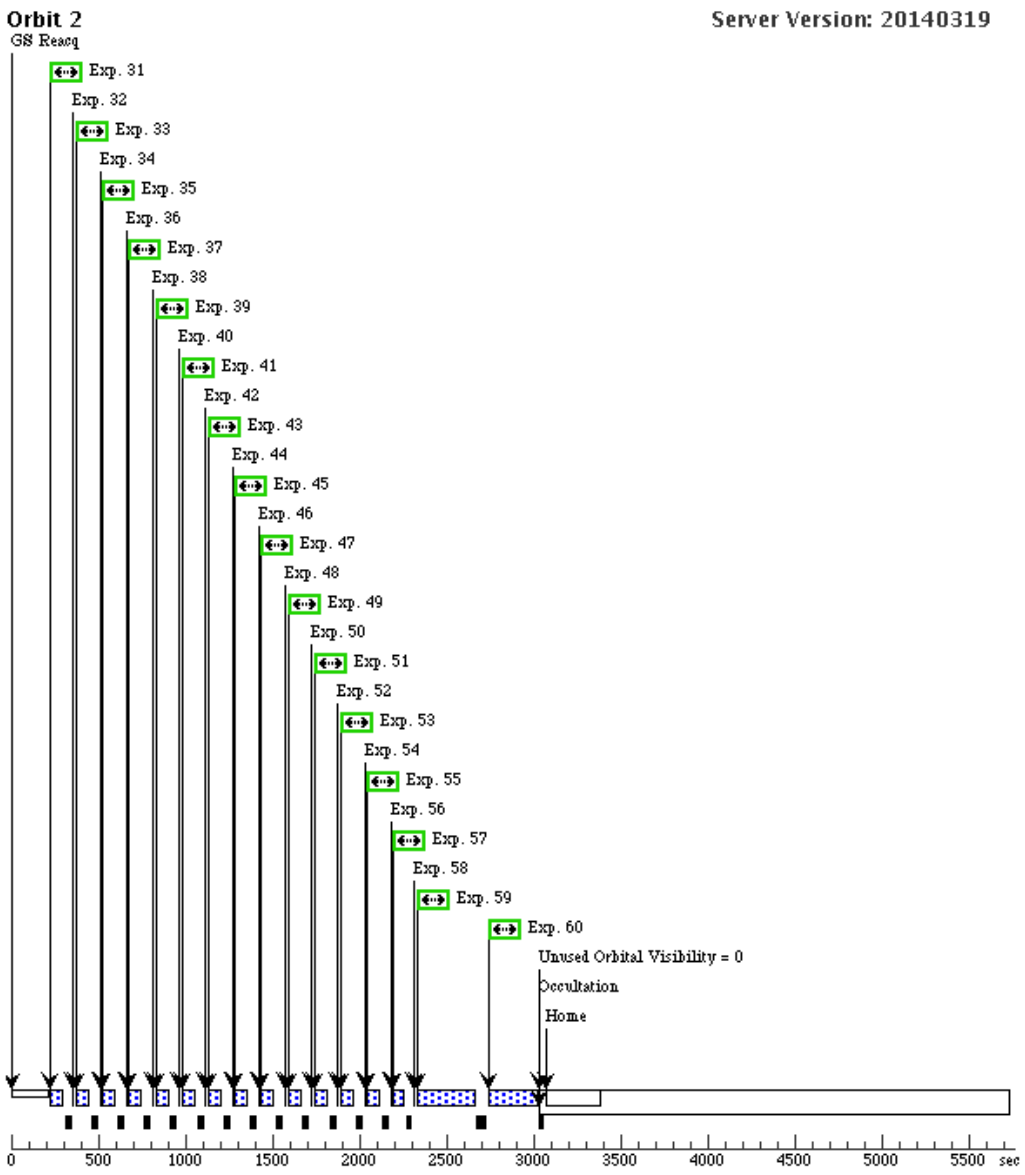
	61	Ramp down to HVLOW	DARK	S/C, DATA, NONE	NEW OBSET; QASISTATES COS SI OPERATE OPERATE; QASISTATES COS FUV HVLOW HVLOW; QASISTATES COS NUV HVSAA HVSAA	1 Secs (1 Secs) *[==>]*	***[3]***

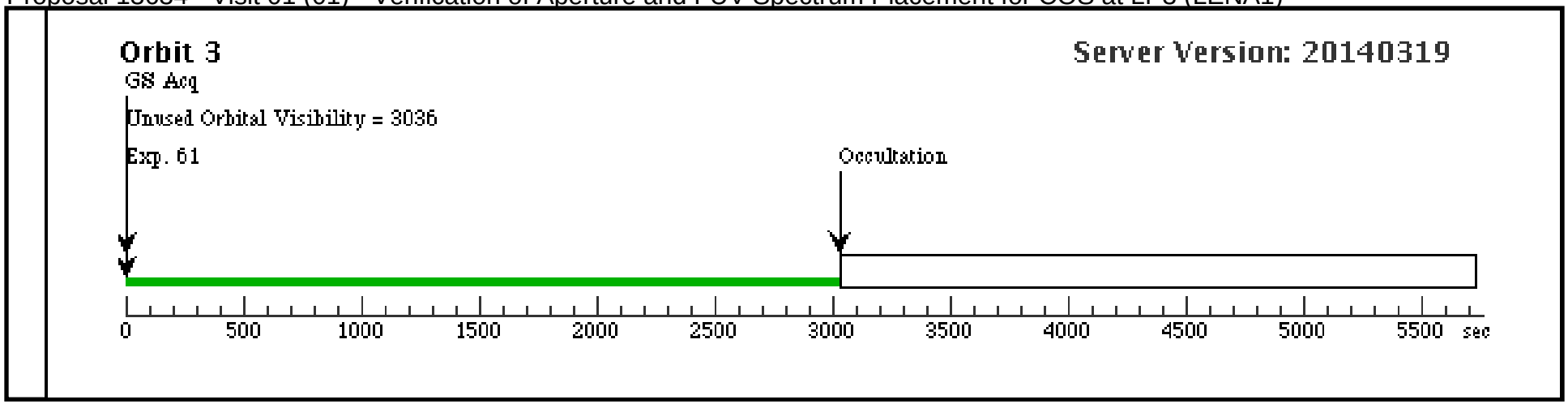
Comments: Ramp down to HVLOW at the end of the visit

"The New Obset SR is necessary to force this exposure to be the very last exposure after Home."

Orbit Structure




Orbit 2
Server Version: 20140319
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
Exp. 44
Exp. 45
Exp. 46
Exp. 47
Exp. 48
Exp. 49
Exp. 50
Exp. 51
Exp. 52
Exp. 53
Exp. 54
Exp. 55
Exp. 56
Exp. 57
Exp. 58
Exp. 59
Exp. 60
Unused Orbital Visibility = 0
Occultation
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec


Orbit 3
Server Version: 20140319
GS Acq
Unused Orbital Visibility = 3036
Exp. 61
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec