18200 - Cycle 33 COS FUV Target Acquisition Monitor

Cycle: 33, Proposal Category: CAL/COS

(Availability Mode: RESTRICTED)

INVESTIGATORS

Name	*Institution*
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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) WD-1657+343	COS/FUV COS/NUV	1	09-Oct-2025 11:08:12.0	yes
02	(1) WD-1657+343	COS/FUV COS/NUV	1	09-Oct-2025 11:08:13.0	yes
03	(1) WD-1657+343	COS/FUV COS/NUV	1	09-Oct-2025 11:08:14.0	yes

3 Total Orbits Used

ABSTRACT

This program verifies that FUV spectroscopic target acquisitions are working nominally for the modes allowed in cycle 33: G130M at LP7, G140L at LP4, and G160M at LP10. For each grating the cenwave with the widest cross dispersion profile in which acquisitions are done is used, yielding the combinations G130M/1291, G140L/1280, and G160M/1600. After the standard target WD 1657+343 is centered using ACQ/IMAGE we take spectra at the NUM-POS positions used by the PEAKXD and PEAKD algorithms to inspect those regions of the detector and check the vignetted

flux. We then perform a PEAKXD and/or PEAKD acquisition and take a spectrum to verify centering. We test PEAKXD with NUM-POS=3 (default) and 5, and PEAKD with NUM-POS=5 (default). A detailed description of the observations is given in the visit level comments. This program follows the prescription used in the last several cycles, and is most recently adapted from the cycle 32 program 17623.

Cycle 33
G130M tests have moved to LP7 from LP5. Because LP7 uses split-wavecal mode, all G130M tests have FLASH=NO and WAVECAL=NO set as optional parameters.
G160M tests have moved from LP4 and LP6 to LP10. The reduction in TA modes being monitored has allowed us to reduce the number of orbits required from 4 to 3.
G140L tests remain at LP4, and are the same as in the cycle 32 program.

OBSERVING DESCRIPTION

This program consists of three orbits, each with a non-interrupt sequence. The program is divided into three visits to allows the last two orbits to have schedulability 100, whereas the first orbit needs schedulability 80. The last two orbits are split into two visits to facilitate scheduling.

We request that this program execute between 01-Nov-2025 and 01-Mar-2026 (via a BETWEEN), and within 120 days of Visit PB of Program 18203 (via a visit-level comment).

The program is divided into 3 parts, one for each FUV grating. The central wavelengths tested are G130M/1291 at LP7, G140L/1280 at LP4, and G160M/1600 at LP10. These cenwaves were chosen because they provide the widest cross-dispersion profile allowed for acquisitions.

For each grating, we first acquire the target using ACQ/IMAGE, take a spectrum to verify the ACQ/IMAGE centering, take off-centered spectra using POSTARG, and then run an acquisition sequence. The visit level comments contain a detailed description of the observations.

Comments for each exposure give the Buffer Time calculations. However, in most cases we use slighter shorter buffer times in case the targets are brighter than expected. The logic being that if any of the PEAKXDs are not exactly perfect, the followup POS-TARGs may be off and give different count rates than expected.

Visit

Proposal 18200, PSA/MIRRORB ACQ/IMAGE then LP7 G130M FUV TA Monitoring (01) Thu Oct 09 15:08:15 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 80%; BETWEEN 01-NOV-2025:00:00:00 AND 01-MAR-2026:00:00:00

Comments: This visit is separated from visits 2 and 3 because this visit needs schedulability 80, whereas visits 2 and 3 can use 100.
This visit has the following timing requirement:
** It should execute between 01-Nov-2025 and 01-Mar-2026*
** It should execute within 120 days of visit PB of program 18203*

This visit tests spectroscopic target acquisition using FUV G130M/1291. The sequence of events is as follows
01.001 - NUV ACQ/IMAGE
01.002 - NUV Image with WCA lamps, to check alignment later on.
01.003 - G130M/1291 spectrum to establish center position after ACQ/IMAGE
01.004, 01.005 - +/-1.3" XD POSTARGS to simmulate NUM-POS=3 PEAKXD
01.006 - PEAKXD with NUM-POS=3
01.007 - Verification spectrum
01.008 to 01.011 - Simulates PEAKXD with NUM-POS=5, STEP-SIZE=0.9
01.012 - PEAKXD with NUM-POS=5
01.013 - Verification spectrum
01.014 - PEAKD
01.015 - Verification spectrum

Diagnostics

(PSA/MIRRORB ACQ/IMAGE then LP7 G130M FUV TA Monitoring (01)) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions at a given COS cenwave (or 2 positions for certain exception cases). See extended explanation in the diagnostic browser.

(PSA/MIRRORB ACQ/IMAGE then LP7 G130M FUV TA Monitoring (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(PSA/MIRRORB ACQ/IMAGE then LP7 G130M FUV TA Monitoring (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(PSA/MIRRORB ACQ/IMAGE then LP7 G130M FUV TA Monitoring (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(PSA/MIRRORB ACQ/IMAGE then LP7 G130M FUV TA Monitoring (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(PSA/MIRRORB ACQ/IMAGE then LP7 G130M FUV TA Monitoring (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE NO ORIENT

(PSA/MIRRORB ACQ/IMAGE then LP7 G130M FUV TA Monitoring (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE NO ORIENT

(PSA/MIRRORB ACQ/IMAGE then LP7 G130M FUV TA Monitoring (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE NO ORIENT

(PSA/MIRRORB ACQ/IMAGE then LP7 G130M FUV TA Monitoring (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE NO ORIENT

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	WD-1657+343	RA: 16 58 51.1202 (254.7130008d)	Proper Motion RA: 11 mas/yr	V=16.1	Reference Frame: ICRS
		Dec: +34 18 53.29 (34.31480d)	Proper Motion Dec: -31 mas/yr		
		Equinox: J2000	Epoch of Position: 2000		
			Radial Velocity: 78 km/sec		

Comments: COS.ta.1032496 indicates S/N = 40 in 5.2s. SIMBAD cordinates are 16 58 51.1202 +34 18 53.293
Proper Motion from SIMBAD is Proper motions mas/yr : 11 -31 [3 3 133] C 2011MNRAS.417.1210G, RV=78

B 16.12 [~] D ~
u (AB) 15.749 [0.005] B 2013yCat.5139....0A
g (AB) 16.139 [0.003] B 2013yCat.5139....0A
r (AB) 16.691 [0.004] B 2013yCat.5139....0A
i (AB) 17.054 [0.005] B 2013yCat.5139....0A
z (AB) 17.388 [0.015] C 2013yCat.5139....0A
Category=STAR
Description=[DA]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	PSA/MIRRORB ACQ/IMAGE (COS.ta.2140554)	(1) WD-1657+343	COS/NUV, ACQ/IMAGE, PSA	MIRRORB		GS ACQ SCENARIO BASE1O3	Sequence 1-15 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP7 G130M FUV TA Monitoring (01)	7 Secs (7 Secs) *[==>]*	***[1]***
2	PSA/MIRRORB LAMP+TARGET IMAGE (P2/MEDIUM) (COS.im.1926451)	(1) WD-1657+343	COS/NUV, TIME-TAG, PSA	MIRRORB	BUFFER-TIME=150; FLASH=S0060D015; CURRENT=MEDIUM	QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-15 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP7 G130M FUV TA Monitoring (01)	15.0 Secs (15 Secs) *[==>]*	***[1]***
Comments: PSA/MIRRORB/P2/MED current, see above for expected count rates. To get PtNe Lamp 2, there are 2 QESIPARMs set: *USELAMP = LINE2* *CURRENT = MEDIUM* *This target was used in Visit BA of 14857 (ldozbadhq). Bck subtracted counts in second image = 5430 ; S/N = 73.69, ET=13s* *For the Lamp, LAMP/CURRENT USED = P2/Medium, LAMP EXPTIME = 12.000 s* *Reported Lamp Events = 3316 counts : Rate = 276.33334 counts/s* *Lamp Background events in 50x300 TA BOX for lampflash time (12s) = 112 cts : Rate = 9.308 counts/s* *Actual Lamp Events = 3204 counts : Rate = 267.026 counts/s*								
3	PSA/C1291/3 - CENTER (COS.sp.2140537)	(1) WD-1657+343	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=300; LIFETIME-POS=DEF; FLASH=NO; WAVECAL=NO	QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-15 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP7 G130M FUV TA Monitoring (01)	30 Secs (30 Secs) *[==>]*	***[1]***
Comments: In cycle 31 and before the goal was listed as S/N ~ 5 in 25s *New ETC runs in preparation for cycle 33 give:* *COS.sp.2140536 S/N = 4 in 23s* *COS.sp.2140535 S/N = 5 in 36s* *Due to limited time available in this orbit, the decision is to use 30 s for the centered exposures, which gives S/N = 4.6 (COS.sp.2140537)*									
4	PSA/C1291/3 +1.3arcseconds in XD (COS.sp.2140537)	(1) WD-1657+343	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=500; LIFETIME-POS=DEF; FLASH=NO; WAVECAL=NO	POS TARG null,1.3; QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-15 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP7 G130M FUV TA Monitoring (01)	50 Secs (50 Secs) *[==>]*	***[1]***
Comments: At R=1.3", the throughput is ~45%. To get the same counts, exposure time should be to 67s. Set to 50 s to fit within orbit.									
5	PSA/C1291/3 -1.3arcseconds in XD (COS.sp.2140537)	(1) WD-1657+343	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=500; LIFETIME-POS=DEF; FLASH=NO; WAVECAL=NO	POS TARG null,-1.3; QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-15 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP7 G130M FUV TA Monitoring (01)	50 Secs (50 Secs) *[==>]*	***[1]***
Comments: At R=1.3", the throughput is ~45%. To get the same counts, exposure time should be to 67s. Set to 50 s to fit within orbit.									

6	PSA/C1291/3 - PEAKXD/NP=3/DEF (COS.sa.2140544)	(1) WD-1657+343	COS/FUV, ACQ/PEAKXD, PSA	G130M 1291 A	LIFETIME-POS=DEF	QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-15 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP7 G130M FUV TA Monitoring (01)	2 Secs (2 Secs)	[==>]	[1]

Comments: The NUM_POS and STEP_SIZE are not included to make sure that the correct DEFAULTS of NUM_POS=3 and STEP_SIZE=1.3", and CENTER = FLUX-WT are still inserted.

Target is the HST Standard Star:WD-1657+343

Requested Signal/Noise Ratio = 40.000 for Segment A and Segment B combined gives: Time = 0.5194 seconds
Time Required for Requested SNR in Segment A only: 1.8166
Time Required for Requested SNR in Segment B only: 0.7273

7	PSA/C1291/3 - After NUM_POS=3 PEAKXD (COS.sp.2140537)	(1) WD-1657+343	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=300; LIFETIME-POS=DEF; FLASH=NO; WAVECAL=NO	QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-15 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP7 G130M FUV TA Monitoring (01)	30 Secs (30 Secs)	[==>]	[1]

Comments: In cycle 31 and before the goal was listed as S/N ~ 5 in 25s
New ETC runs in preparation for cycle 33 give:
COS.sp.2140536 S/N = 4 in 23s
COS.sp.2140535 S/N = 5 in 36s
Due to limited time available in this orbit, the decision is to use 30 s for the centered exposures, which gives S/N = 4.6 (COS.sp.2140537)

8	PSA/C1291/3 +1.8arcseconds in XD (COS.sp.2140537)	(1) WD-1657+343	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=1000; LIFETIME-POS=DEF; FLASH=NO; WAVECAL=NO	POS TARG null,1.8; QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-15 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP7 G130M FUV TA Monitoring (01)	180 Secs (180 Secs)	[==>]	[1]

Comments: At R=1.8", the throughput is ~13%. To get the same counts, exposure time should be to 230s. Set to 180 s to fit within orbit.

9	PSA/C1291/3 +0.9arcseconds in XD (COS.sp.2140537)	(1) WD-1657+343	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=400; LIFETIME-POS=DEF; FLASH=NO; WAVECAL=NO	POS TARG null,0.9; QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-15 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP7 G130M FUV TA Monitoring (01)	32 Secs (32 Secs)	[==>]	[1]

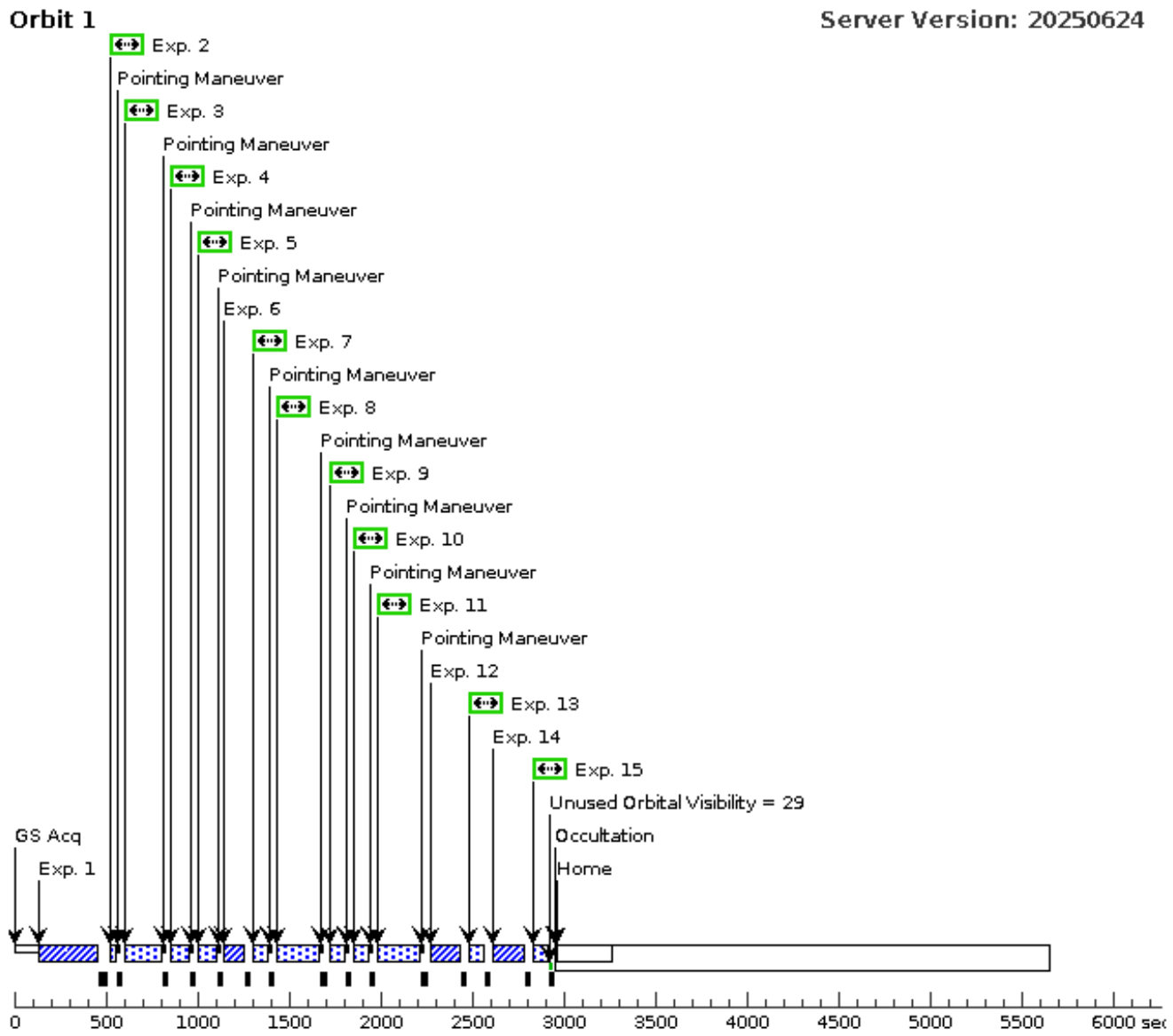
Comments: At R=0.9", the throughput is ~71%. To get the same counts, exposure time should be to 42 s. Set to 32 s to fit within orbit.

10	PSA/C1291/3 -0.9arcseconds in XD (COS.sp.2140537)	(1) WD-1657+343	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=400; LIFETIME-POS=DEF; FLASH=NO; WAVECAL=NO	POS TARG null,-0.9; QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-15 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP7 G130M FUV TA Monitoring (01)	32 Secs (32 Secs)	[==>]	[1]

Comments: At R=0.9", the throughput is ~71%. To get the same counts, exposure time should be to 42 s. Set to 32 s to fit within orbit.

11	PSA/C1291/3 -1.8arcseconds in XD (COS.sp.2140537)	(1) WD-1657+343	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=1000; LIFETIME-POS=DEF; FLASH=NO; WAVECAL=NO	POS TARG null,-1.8; QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-15 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP7 G130M FUV TA Monitoring (01)	180 Secs (180 Secs)	*[==>]*	***[1]***
Comments: At R=1.8", the throughput is ~13%. To get the same counts, exposure time should be to 230s. Set to 180 s to fit within orbit.										
12	PSA/C1291/PEAKXD/NP=5/DEF (COS.sa.2140544)	(1) WD-1657+343	COS/FUV, ACQ/PEAKXD, PSA	G130M 1291 A	LIFETIME-POS=DEF; NUM-POS=5; STEP-SIZE=0.9	QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-15 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP7 G130M FUV TA Monitoring (01)	2 Secs (2 Secs)	*[==>]*	***[1]***
Comments: The default STEP-SIZE is 1.0", but at +/- 2", the POS_TARGS would not create enough counts to track the operation of the NUM_POS=5 PEAKXD. 5x0.9" is used instead. Double check that the DEFAULT CENTER=FLUX-WT-FLR is used. It is left unspecified to test that the default APT logic is still correctly choosing the correct CENTER algorithm. *Requested Signal/Noise Ratio = 40.000 for Segment A and Segment B combined gives: Time = 0.5194 seconds* *Time Required for Requested SNR in Segment A only: 1.8166* *Time Required for Requested SNR in Segment B only: 0.7273*									
13	PSA/C1291/3 - After NUM_POS=5 PEAKXD (COS.sp.2140537)	(1) WD-1657+343	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=300; LIFETIME-POS=DEF; FLASH=NO; WAVECAL=NO	QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-15 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP7 G130M FUV TA Monitoring (01)	30 Secs (30 Secs)	*[==>]*	***[1]***
Comments: In cycle 31 and before the goal was listed as S/N ~ 5 in 25s *New ETC runs in preparation for cycle 33 give:* *COS.sp.2140536 S/N = 4 in 23s* *COS.sp.2140535 S/N = 5 in 36s* *Due to limited time available in this orbit, the decision is to use 30 s for the centered exposures, which gives S/N = 4.6 (COS.sp.2140537)*										
14	PSA/C1291/PEAKD/NP=5/DEF (COS.sa.2140544)	(1) WD-1657+343	COS/FUV, ACQ/PEAKD, PSA	G130M 1291 A	LIFETIME-POS=DEF; NUM-POS=5; STEP-SIZE=0.9	QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-15 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP7 G130M FUV TA Monitoring (01)	3 Secs (3 Secs)	*[==>]*	***[1]***
Comments: We want to check the AD NUV to FUV SIAF alignment, so perform a good PEAKD. Double check that the DEFAULT CENTER=FLUX-WT-FLR is used. It is left unspecified to test that the default APT logic is still correctly choosing the correct CENTER algorithm. *Requested Signal/Noise Ratio = 40.000 for Segment A and Segment B combined gives: Time = 0.5194 seconds* *Time Required for Requested SNR in Segment A only: 1.8166* *Time Required for Requested SNR in Segment B only: 0.7273*										
15	PSA/C1291/3 - After PEAKD (COS.sp.2140537)	(1) WD-1657+343	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=300; LIFETIME-POS=DEF; FLASH=NO; WAVECAL=NO	QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-15 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP7 G130M FUV TA Monitoring (01)	30 Secs (30 Secs)	*[==>]*	***[1]***
Comments: In cycle 31 and before the goal was listed as S/N ~ 5 in 25s *New ETC runs in preparation for cycle 33 give:* *COS.sp.2140536 S/N = 4 in 23s* *COS.sp.2140535 S/N = 5 in 36s* *Due to limited time available in this orbit, the decision is to use 30 s for the centered exposures, which gives S/N = 4.6 (COS.sp.2140537)*										

Orbit Structure



Visit

Proposal 18200, PSA/MIRRORB ACQ/IMAGE then LP10 G160M FUV TA monitor (02) Thu Oct 09 15:08:15 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%; BETWEEN 01-NOV-2025:00:00:00 AND 01-MAR-2026:00:00:00

Comments: This orbit is separated from visit 01 because it can use schedulability 100. The orbit in visit 01 requires schedulability 80.
This visit has the following timing requirement:
** It should execute between 01-Nov-2025 and 01-Mar-2026*
** It should execute within 120 days of visit PB of program 18203*

This visit has one orbit, structured as follows

Tests FUV G160M/1600 spectroscopic acquisition at LP10
02.001 - ACQ/IMAGE
02.002 - NUV image with WCA lamps to verify alignment
02.003 - spectrum centered after ACQ/IMAGE, for comparison
02.004, 02.005 - simulate PEAKXD with NUM-POS=3
02.006 - PEAKXD with NUM-POS=3
02.007 - verification spectrum
02.008 - PEAKD with NUM-POS=5
02.009 - verification spectrum

Diagnostics

(PSA/MIRRORB ACQ/IMAGE then LP10 G160M FUV TA monitor (02)) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions at a given COS cenwave (or 2 positions for certain exception cases). See extended explanation in the diagnostic browser.

(PSA/MIRRORB ACQ/IMAGE then LP10 G160M FUV TA monitor (02)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(PSA/MIRRORB ACQ/IMAGE then LP10 G160M FUV TA monitor (02)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(PSA/MIRRORB ACQ/IMAGE then LP10 G160M FUV TA monitor (02)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE NO ORIENT

(PSA/MIRRORB ACQ/IMAGE then LP10 G160M FUV TA monitor (02)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE NO ORIENT

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	WD-1657+343	RA: 16 58 51.1202 (254.7130008d)	Proper Motion RA: 11 mas/yr	V=16.1	Reference Frame: ICRS
		Dec: +34 18 53.29 (34.31480d)	Proper Motion Dec: -31 mas/yr		
		Equinox: J2000	Epoch of Position: 2000		
			Radial Velocity: 78 km/sec		

Comments: COS.ta.1032496 indicates S/N = 40 in 5.2s. SIMBAD cordinates are 16 58 51.1202 +34 18 53.293
Proper Motion from SIMBAD is Proper motions mas/yr : 11 -31 [3 3 133] C 2011MNRAS.417.1210G, RV=78

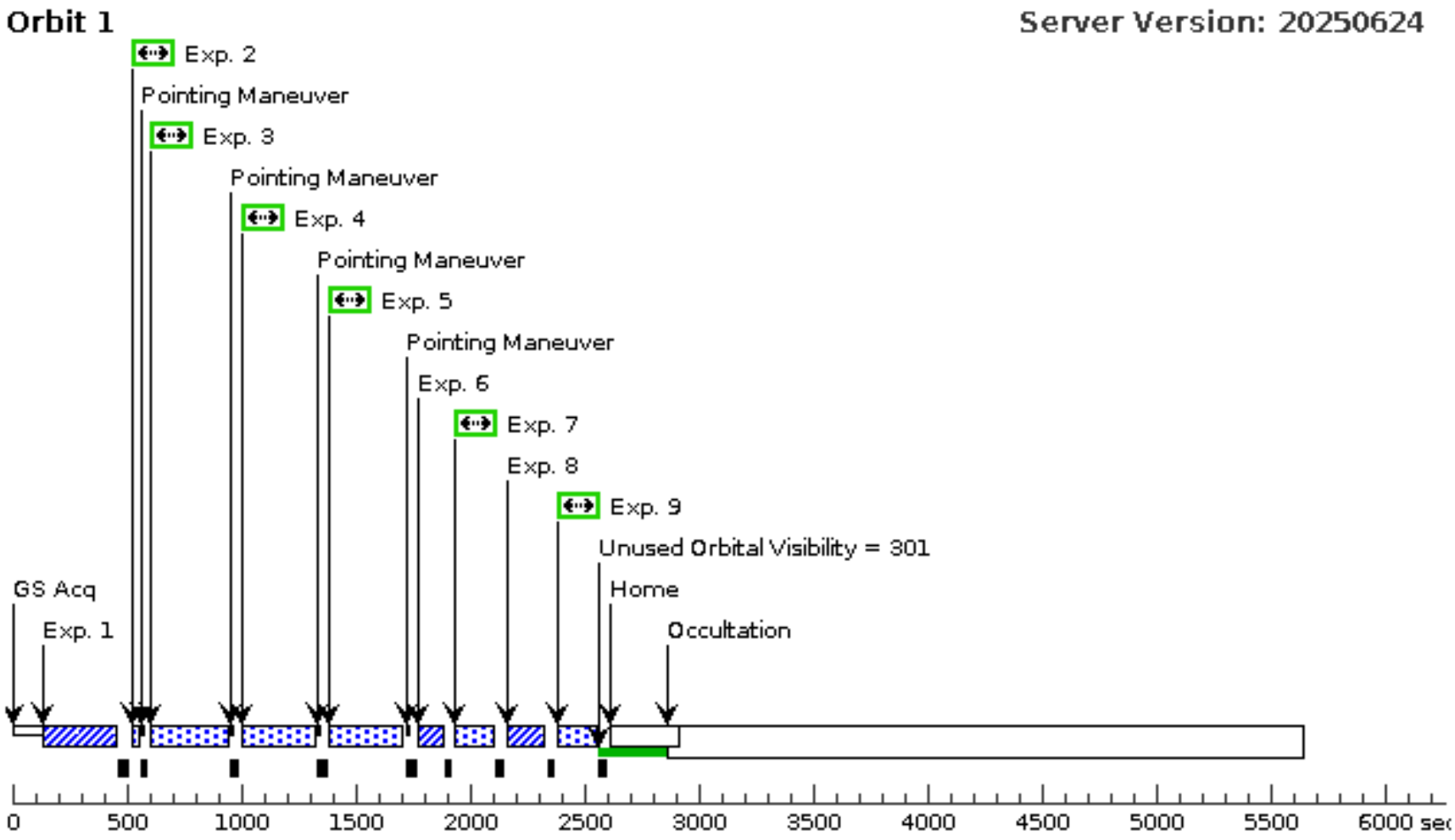
B 16.12 [~] D ~
u (AB) 15.749 [0.005] B 2013yCat.5139....0A
g (AB) 16.139 [0.003] B 2013yCat.5139....0A
r (AB) 16.691 [0.004] B 2013yCat.5139....0A
i (AB) 17.054 [0.005] B 2013yCat.5139....0A
z (AB) 17.388 [0.015] C 2013yCat.5139....0A
Category=STAR
Description=[DA]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	PSA/MIRRORB ACQ/IMAGE (COS.ta.2140554)	(1) WD-1657+343	COS/NUV, ACQ/IMAGE, PSA	MIRRORB		GS ACQ SCENARIO BASE1O3	Sequence 1-9 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP10 G160M FUV TA monitor (02)	7 Secs (7 Secs) *[==>]*	***[1]***
2	PSA/MIRRORB LAMP+TARGET IMAGE (P2/MEDIUM) (COS.im.1926451)	(1) WD-1657+343	COS/NUV, TIME-TAG, PSA	MIRRORB	BUFFER-TIME=1500; FLASH=S0060D015; CURRENT=MEDIUM	QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-9 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP10 G160M FUV TA monitor (02)	15.0 Secs (15 Secs) *[==>]*	***[1]***
	Comments: Identical to 01.002 PSA/MIRRORB/P2/MED current. To get PtNe Lamp 2, there are 2 QESIPARMs set: USELAMP = LINE2 CURRENT = MEDIUM								
3	PSA/G160M/1600/3 - CENTER (COS.sp.2140538)	(1) WD-1657+343	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=3; BUFFER-TIME=8000; LIFETIME-POS=DEF	QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-9 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP10 G160M FUV TA monitor (02)	120 Secs (120 Secs) *[==>]*	***[1]***
	Comments: Update for cycle 33 (18200) based on new ETC run to achieve S/N=4 per resel Exposure time = 120 s centered (267 s off-center by 1.3 arcsec) *Comments below applied to cycle 31 and earlier Exposure time (seconds) = 82.0000 at wavelength 1602.00 gives: SNR = 3.9389 (per resolution element)*								
4	PSA/G160M/1600/3 + 1.3arcseconds in XD (COS.sp.2140538)	(1) WD-1657+343	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=3; BUFFER-TIME=1000; LIFETIME-POS=DEF	POS TARG null,1.3; QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-9 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP10 G160M FUV TA monitor (02)	267 Secs (267 Secs) *[==>]*	***[1]***
	Comments: At R=1.3", the throughput is ~45%. To get the same counts, we need to increase the exposure time.								
5	PSA/G160M/1600/3 -1.3arcseconds in XD (COS.sp.2140538)	(1) WD-1657+343	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=3; BUFFER-TIME=1000; LIFETIME-POS=DEF	POS TARG null,-1.3; QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-9 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP10 G160M FUV TA monitor (02)	267 Secs (267 Secs) *[==>]*	***[1]***
	Comments: At R=1.3", the throughput is ~45%. To get the same counts, we need to increase the exposure time.								
6	PSA/G160M/PEAKXD/NP=3/DEF (COS.sa.2140540)	(1) WD-1657+343	COS/FUV, ACQ/PEAKXD, PSA	G160M 1600 A	LIFETIME-POS=DEF; NUM-POS=3; STEP-SIZE=1.3	QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-9 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP10 G160M FUV TA monitor (02)	3 Secs (3 Secs) *[==>]*	***[1]***
	Comments: Requested Signal/Noise Ratio = 40.000 for Segment A and Segment B combined gives: Time = 1.5238 seconds Time Required for Requested SNR in Segment A only: 10.0184 Time Required for Requested SNR in Segment B only: 1.7964								
7	PSA/G160M/1600/3 (COS.sp.2140538)	(1) WD-1657+343	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=3; BUFFER-TIME=8000; LIFETIME-POS=DEF	QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-9 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP10 G160M FUV TA monitor (02)	120 Secs (120 Secs) *[==>]*	***[1]***

	8	PSA/G160M/1600/PEAKD/NP=5/DEF (COS.sa.2140540)	(1) WD-1657+343	COS/FUV, ACQ/PEAKD, PSA	G160M 1600 A	LIFETIME-POS=DEF; NUM-POS=5; STEP-SIZE=0.9		Sequence 1-9 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP10 G160M FUV TA monitor (02)	3 Secs (3 Secs) [==>]	[1]
	Comments: Analogous to exposure 01.014 carried over from previous cycles, but this time to test PEAKD at LP10.									
	9	PSA/G160M/1600/3 (COS.sp.2140538)	(1) WD-1657+343	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=3; BUFFER-TIME=800; LIFETIME-POS=DEF	QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-9 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP10 G160M FUV TA monitor (02)	120 Secs (120 Secs) [==>]	[1]

Orbit Structure



Visit

Proposal 18200, PSA/MIRRORB ACQ/IMAGE then LP4 G140L FUV TA monitor (03) Thu Oct 09 15:08:15 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%; BETWEEN 01-NOV-2025:00:00:00 AND 01-MAR-2026:00:00:00

Comments: This orbit is separated from visit 01 because it can use schedulability 100. The orbit in visit 01 requires schedulability 80.
This visit has the following timing requirement:
** It should execute between 01-Nov-2025 and 01-Mar-2026*
** It should execute within 120 days of visit PB of program 18203*

This visit has one orbit with a non-interrupt sequence, and is structured as follows

Test FUV G140L/1280 spectroscopic acquisition
03.001 - ACQ/IMAGE
03.002 - NUV image with WCA lamps to verify alignment
03.003 - spectrum centered after ACQ/IMAGE, for comparison
03.004, 02.005 - simulate PEAKXD with NUM-POS=3
03.006 - PEAKXD with NUM-POS=3
03.007 - Verification spectrum
03.008 to 03.011 - Simulate PEAKXD with NUM-POS=5
03.012 - PEAKXD with NUM-POS=5
03.013 - Verification spectrum

Diagnostics

(PSA/MIRRORB ACQ/IMAGE then LP4 G140L FUV TA monitor (03)) Warning (Form): COS ACQ/PEAKXD exposure should be followed by an ACQ/PEAKD exposure in the Visit.

(PSA/MIRRORB ACQ/IMAGE then LP4 G140L FUV TA monitor (03)) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions at a given COS cenwave (or 2 positions for certain exception cases). See extended explanation in the diagnostic browser.

(PSA/MIRRORB ACQ/IMAGE then LP4 G140L FUV TA monitor (03)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(PSA/MIRRORB ACQ/IMAGE then LP4 G140L FUV TA monitor (03)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(PSA/MIRRORB ACQ/IMAGE then LP4 G140L FUV TA monitor (03)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(PSA/MIRRORB ACQ/IMAGE then LP4 G140L FUV TA monitor (03)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(PSA/MIRRORB ACQ/IMAGE then LP4 G140L FUV TA monitor (03)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE NO ORIENT

(PSA/MIRRORB ACQ/IMAGE then LP4 G140L FUV TA monitor (03)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE NO ORIENT

(PSA/MIRRORB ACQ/IMAGE then LP4 G140L FUV TA monitor (03)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE NO ORIENT

(PSA/MIRRORB ACQ/IMAGE then LP4 G140L FUV TA monitor (03)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE NO ORIENT

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	WD-1657+343	RA: 16 58 51.1202 (254.7130008d)	Proper Motion RA: 11 mas/yr	V=16.1	Reference Frame: ICRS
		Dec: +34 18 53.29 (34.31480d)	Proper Motion Dec: -31 mas/yr		
		Equinox: J2000	Epoch of Position: 2000		
			Radial Velocity: 78 km/sec		

Comments: COS.ta.1032496 indicates S/N = 40 in 5.2s. SIMBAD cordinates are 16 58 51.1202 +34 18 53.293
Proper Motion from SIMBAD is Proper motions mas/yr : 11 -31 [3 3 133] C 2011MNRAS.417.1210G, RV=78

B 16.12 [~] D ~
u (AB) 15.749 [0.005] B 2013yCat.5139....0A
g (AB) 16.139 [0.003] B 2013yCat.5139....0A
r (AB) 16.691 [0.004] B 2013yCat.5139....0A
i (AB) 17.054 [0.005] B 2013yCat.5139....0A
z (AB) 17.388 [0.015] C 2013yCat.5139....0A
Category=STAR
Description=[DA]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	PSA/MIRRORB ACQ/IMAGE (COS.ta.2140554)	(1) WD-1657+343	COS/NUV, ACQ/IMAGE, PSA	MIRRORB		GS ACQ SCENARIO BASE1O3	Sequence 1-13 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP4 G140L FUV TA monitor (03)	7 Secs (7 Secs) *[==>]*	*[1]*
2	PSA/MIRRORB LAMP+TARGET IMAGE (P2/MEDIUM) (COS.im.1926451)	(1) WD-1657+343	COS/NUV, TIME-TAG, PSA	MIRRORB	BUFFER-TIME=150; FLASH=S0060D015; CURRENT=MEDIUM	QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-13 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP4 G140L FUV TA monitor (03)	15.0 Secs (15 Secs) *[==>]*	*[1]*
Comments: Identical to 01.002 PSA/MIRRORB/P2/ME. To get PtNe Lamp 2, there are 2 QESIPARMs set: USELAMP = LINE2 CURRENT = MEDIUM									
3	PSA/G140L/1280/3 - CENTER (COS.sp.2140545)	(1) WD-1657+343	COS/FUV, TIME-TAG, PSA	G140L 1280 A	FP-POS=3; BUFFER-TIME=400; LIFETIME-POS=LP4	QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-13 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP4 G140L FUV TA monitor (03)	30 Secs (30 Secs) *[==>]*	*[1]*
Comments: Recalculated exposure times for cycle 33 Requested Signal/Noise Ratio = 10.000 at wavelength 1310.00 (per resolution element) gives: Time = 29.4868 seconds COS.sp.2140545 *In cycle 33 default G140L observing is at LP3, while default acquisition for G140L is at LP4. Specify all TIME-TAG exposures to be at LP4 so that acqs and test exposures are done at the same place.*									
4	PSA/G140L/1280/3 +1.3 arcseconds in XD (COS.sp.2140545)	(1) WD-1657+343	COS/FUV, TIME-TAG, PSA	G140L 1280 A	FP-POS=3; BUFFER-TIME=800; LIFETIME-POS=LP4	POS TARG null,1.3; QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-13 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP4 G140L FUV TA monitor (03)	67 Secs (67 Secs) *[==>]*	*[1]*
Comments: At R=1.3", the throughput is ~45%. To get the same counts, we need to increase the exposure time. *In cycle 33 default G140L observing is at LP3, while default acquisition for G140L is at LP4. Specify all TIME-TAG exposures to be at LP4 so that acqs and test exposures are done at the same place.*									
5	PSA/G140L/1280/3 -1.3 arcseconds in XD (COS.sp.2140545)	(1) WD-1657+343	COS/FUV, TIME-TAG, PSA	G140L 1280 A	FP-POS=3; BUFFER-TIME=800; LIFETIME-POS=LP4	POS TARG null,-1.3; QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-13 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP4 G140L FUV TA monitor (03)	67 Secs (67 Secs) *[==>]*	*[1]*
Comments: At R=1.3", the throughput is ~45%. To get the same counts, we need to increase the exposure time. *In cycle 33 default G140L observing is at LP3, while default acquisition for G140L is at LP4. Specify all TIME-TAG exposures to be at LP4 so that acqs and test exposures are done at the same place.*									
6	PSA/G140L/PEAKXD/NP=3/DEF (COS.sa.2140552)	(1) WD-1657+343	COS/FUV, ACQ/PEAKXD, PSA	G140L 1280 A	LIFETIME-POS=DEF; NUM-POS=3; STEP-SIZE=1.3	QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-13 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP4 G140L FUV TA monitor (03)	3 Secs (3 Secs) *[==>]*	*[1]*
Comments: COS.sa.2140552 Requested Signal/Noise Ratio = 40.000 for Segment A and Segment B combined gives: Time = 2.7944 seconds Time Required for Requested SNR in Segment A only: 2.7944									

7	PSA/G140L /1280/3 (COS.sp.2140545)	(1) WD-1657+343	COS/FUV, TIME-TAG, PSA	G140L 1280 A	FP-POS=3; BUFFER-TIME=4000; LIFETIME-POS=LP4	QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-13 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP4 G140L FUV TA monitor (03)	30 Secs (30 Secs)	[==>]	[1]

Comments: In cycle 33 default G140L observing is at LP3, while default acquisition for G140L is at LP4. Specify all TIME-TAG exposures to be at LP4 so that acqs and test exposures are done at the same place.

8	PSA/G140L /1280/3 +1.8 arcseconds in XD (COS.sp.2140545)	(1) WD-1657+343	COS/FUV, TIME-TAG, PSA	G140L 1280 A	FP-POS=3; BUFFER-TIME=4000; LIFETIME-POS=LP4	POS TARG null,1.8; QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-13 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP4 G140L FUV TA monitor (03)	230 Secs (230 Secs)	[==>]	[1]

Comments: 13% flux at 1.8". 30s/.13 ~ 230s

In cycle 33 default G140L observing is at LP3, while default acquisition for G140L is at LP4. Specify all TIME-TAG exposures to be at LP4 so that acqs and test exposures are done at the same place.

9	PSA/G140L /1280/3 +0.9 arcseconds in XD (COS.sp.2140545)	(1) WD-1657+343	COS/FUV, TIME-TAG, PSA	G140L 1280 A	FP-POS=3; BUFFER-TIME=4000; LIFETIME-POS=LP4	POS TARG null,0.9; QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-13 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP4 G140L FUV TA monitor (03)	42 Secs (42 Secs)	[==>]	[1]

Comments: 71% flux at 0.9". 30s/.71 ~ 42s

In cycle 33 default G140L observing is at LP3, while default acquisition for G140L is at LP4. Specify all TIME-TAG exposures to be at LP4 so that acqs and test exposures are done at the same place.

10	PSA/G140L /1280/3 -0.9 arcseconds in XD (COS.sp.2140545)	(1) WD-1657+343	COS/FUV, TIME-TAG, PSA	G140L 1280 A	FP-POS=3; BUFFER-TIME=4000; LIFETIME-POS=LP4	POS TARG null,-0.9; QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-13 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP4 G140L FUV TA monitor (03)	42 Secs (42 Secs)	[==>]	[1]

Comments: 71% flux at 0.9". 30s/.71 ~ 42s

In cycle 33 default G140L observing is at LP3, while default acquisition for G140L is at LP4. Specify all TIME-TAG exposures to be at LP4 so that acqs and test exposures are done at the same place.

11	PSA/G140L /1280/3 -1.8 arcseconds in XD (COS.sp.2140545)	(1) WD-1657+343	COS/FUV, TIME-TAG, PSA	G140L 1280 A	FP-POS=3; BUFFER-TIME=4000; LIFETIME-POS=LP4	POS TARG null,-1.8; QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-13 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP4 G140L FUV TA monitor (03)	230 Secs (230 Secs)	[==>]	[1]

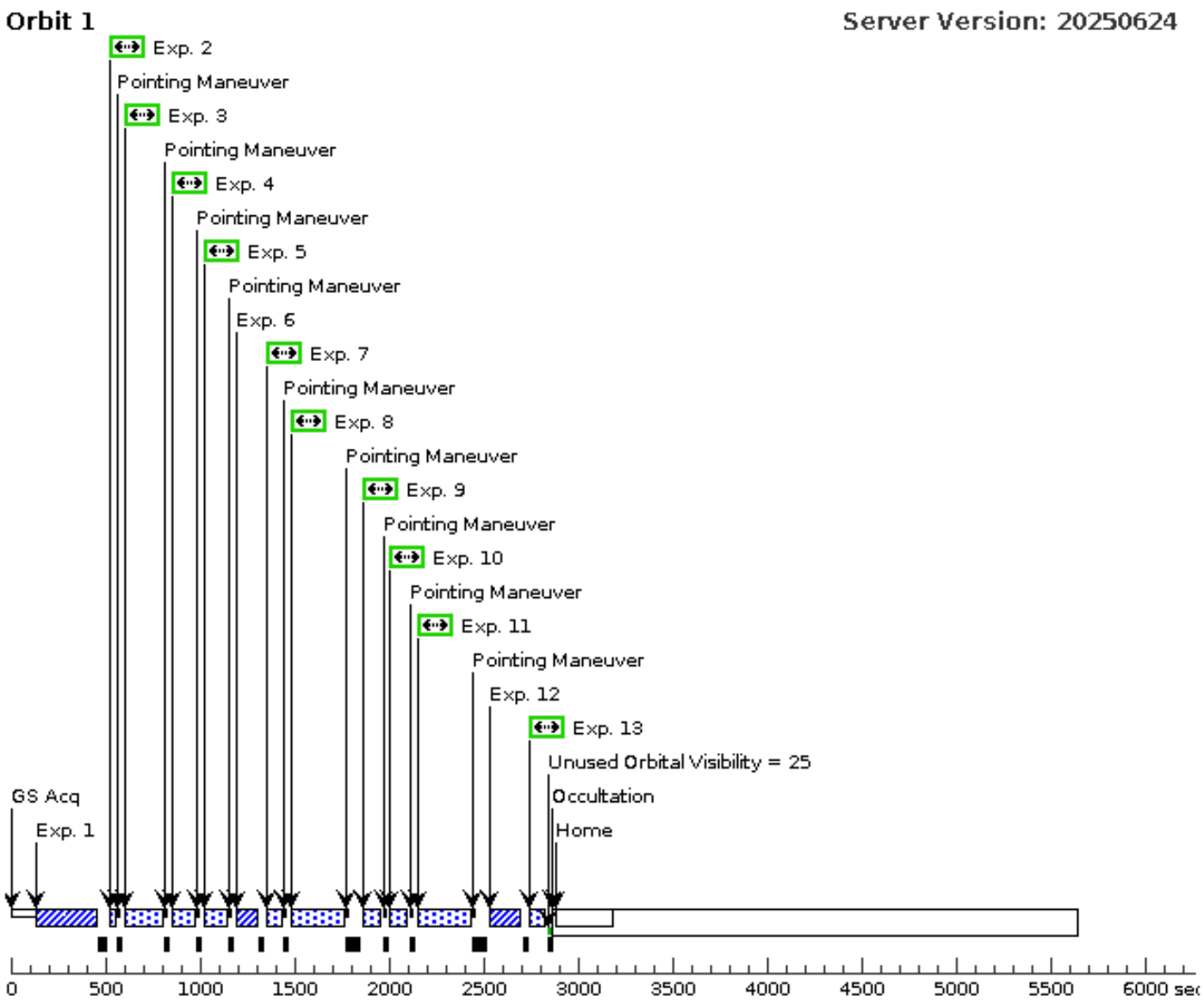
Comments: 13% flux at 1.8". 30s/.13 ~ 230s

In cycle 33 default G140L observing is at LP3, while default acquisition for G140L is at LP4. Specify all TIME-TAG exposures to be at LP4 so that acqs and test exposures are done at the same place.

12	PSA/G140L /PEAKXD/NP=5/DEF (COS.sa.2140552)	(1) WD-1657+343	COS/FUV, ACQ/PEAKXD, PSA	G140L 1280 A	LIFETIME-POS=DEF; NUM-POS=5; STEP-SIZE=0.9	QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-13 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP4 G140L FUV TA monitor (03)	3 Secs (3 Secs)	[==>]	[1]

Comments: COS.sa.2140552
Requested Signal/Noise Ratio = 40.000 for Segment A and Segment B combined gives: Time = 2.7944 seconds
Time Required for Requested SNR in Segment A only: 2.7944

13	PSA/G140L /1280/3 (COS.sp.2140545)	(1) WD-1657+343	COS/FUV, TIME-TAG, PSA	G140L 1280 A	FP-POS=3; BUFFER-TIME=4000; LIFETIME-POS=LP4	QESIPARM USELAMP LINE2; QESIPARM CURRENT MEDIUM	Sequence 1-13 Non-Int in PSA/MIRRORB ACQ/IMAGE then LP4 G140L FUV TA monitor (03)	30 Secs (30 Secs)	[==>]	[1]

Comments: In cycle 33 default G140L observing is at LP3, while default acquisition for G140L is at LP4. Specify all TIME-TAG exposures to be at LP4 so that acqs and test exposures are done at the same place.

Orbit Structure