16432 - COS LP5 FUV Target Acquisition Enabling and Verification

Cycle: 28, Proposal Category: CAL/COS

(Availability Mode: RESTRICTED)

INVESTIGATORS

Name	*Institution*	*E-Mail*
Dr. Sergio B. Dieterich (PI) (Contact)	**Space Telescope Science Institute**	**sdieterich@stsci.edu**
Dr. David J. Sahnow (CoI) (Contact)	Space Telescope Science Institute	sahnow@stsci.edu
Elaine M Frazer (CoI)	Space Telescope Science Institute	efrazer@stsci.edu
Kate Rowlands (CoI)	Space Telescope Science Institute	krowlands@stsci.edu
Dr. Marc Rafelski (CoI)	Space Telescope Science Institute	mrafelski@stsci.edu
Dr. Bethan Lesley James (CoI)	Space Telescope Science Institute - ESA - JWST	bjames@stsci.edu
Dr. William J. Fischer (CoI)	Space Telescope Science Institute	wfischer@stsci.edu
Dr. Travis C Fischer (CoI) (ESA Member)	Space Telescope Science Institute - ESA	tfischer@stsci.edu

VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) AZV18 (11) AZV18-OFFSET+1AD+1XD-OR+1.4OFF	COS/FUV COS/NUV	1	29-Sep-2021 13:01:20.0	yes
02	(1) AZV18 (21) AZV18-OFFSET-AD-0.3 (22) AZV18-OFFSET-AD+0.4	COS/FUV COS/NUV	1	29-Sep-2021 13:01:23.0	yes
03	(1) AZV18 (31) AZV18-OFFSET-XD+0.5 (32) AZV18-OFFSET-XD+0.8	COS/FUV COS/NUV	1	29-Sep-2021 13:01:26.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
04	(6) WD1657+343 (61) WD1657+343-OFFSET+0.7AD+0.7XD (62) WD1657+343-OFFSET+0.7AD+1.05XD (63) WD1657+343-OFFSET+1.05AD+1.05XD	COS/FUV COS/NUV	1	29-Sep-2021 13:01:28.0	yes

4 Total Orbits Used

ABSTRACT

----SPECIAL REQUESTS FOR ARCHIVE:-----

1. Please turn off calibration for the COS/FUV exposures.

2. Please disassociate all exposures. SQL is used to meet the above requests.

In case 1 qexposure.control_id is modified. In case 2 qeassociation records are deleted. Please see G. Chapman/M. Reinhart.

This program is designed to verify acquisition parameters at LP5 and to produce spectra at several regions on the detector that would normally be used for target acquisition, but for which data are not downlinked as part of the acquisition process. The idea is that if anything does go wrong with the acquisition tests we will have maps of the detector that we can then use for diagnostics. These images also produce an additional check of the detector plate scale after the aperture placement and focus enabling programs are done.

The program uses ficticious offset targets to nod the telescope away from a centered target and then test the re-acquisition. Because these displacements need to happen along the AD and XD detector direction and target offset coordinates must be entered in RA and DEC, the ORIENT angle for each visit must be restricted to +/- 0.5 degrees, which also means a date range restriction. The date ranges and ORIENT restrictions for each visit are described in the program description. The program is modeled after the LP4 version of this program: 14907. It uses targets AZV18 for visits 1, 2, and 3, and target WD1657+343 for visit 4.

Prior to the submission of this program all LP5 SIAF, aperture mechnism positions, TA subarray, and foci must have been installed.

There is no special commanding in this program.

OBSERVING DESCRIPTION

----SPECIAL REQUESTS FOR ARCHIVE:-----

1. Please turn off calibration for the COS/FUV exposures.

2. Please disassociate all exposures. SQL is used to meet the above requests.

In case 1 qexposure.control_id is modified. In case 2 qeassociation records are deleted. Please see G. Chapman/M. Reinhart.

Details of the overall program are described in the abstract and details on individual observations are described at the visit level. A copy of the abstract is entered here.

This program is designed to verify acquisition parameters at LP5 and to produce spectra at several regions on the detector that would normally be used for target acquisition, but for which data are not downlinked as part of the acquisition process. The idea is that if anything does go wrong with the acquisition tests we will have maps of the detector that we can then use for diagnostics. These images also produce an additional check of the detector plate scale after the aperture placement and focus enabling programs are done.

The program uses ficticious offset targets to nod the telescope away from a centered target and then test the re-acquisition. Because these displacements need to happen along the AD and XD detector direction and target offset coordinates must be entered in RA and DEC, the ORIENT angle for each visit must be restricted to +/- 0.5 degrees, which also means a date range restriction. The date ranges and ORIENT restrictions for each visit are as follows:

VIST	DATE RANGE	ORIENT
1	11/16/20 to 11/22/20	153 degrees
2	01/03/21 to 01/10/21	90
3	03/01/21 to 03/09/21	150
4	10/01/21 to 10/02/21	70 (Changed to 74.5 on Bill J's request due to guide star issue. virtual targets for visit 4 updated.

The offset targets used in different dates have been defined according to the COS ORIENT parameters, Phase II instructions section 6.2.2. From there we derive:

Delta(dec) = Delta(AD)*cos(ORIENT - 45) + Delta(XD)*cos(ORIENT - 135) will yield the result in arcseconds, which is what APT wants.
Delta(RA) = (Delta(AD)*sin(ORIENT - 45) + Delta(XD)*sin(ORIENT - 135))/(3600. * cos(dec)) will yield the result in decimal degrees of RA, which is what APT wants.

In all cases, a test consists of:
1 - Acquire the target with a NUV ACQ/IMAGE, so it is centered.
2 - Take a cenetered spectrum for comparison.
3 - Use POSTARG to take spectrum at the detector placements where acquisition spectra will be taken because these acquisition spectra are not downlinked.
4 - Use a ficticious target to generate an offset from the real target and run the acquisition.
5 - Take another spectrum to compare the result of the acquisition to the original spectrum.

The structure of the program is as follows, and detailed explanations are at the visit level:
Visit 1: testing ACQ/SEARCH
Visit 2: testing PEAKD
Visit 3: testing PEAKXD
Visit 4: Testing all FUV ACQ modes as the default on the first day of LP5 as the default, October 1, 2021

The program is modeled after the LP4 version of this program: 14907. It uses targets AZV18 for visits 1, 2, and 3, and target WD1657+343 for visit 4.
In all cases we use the G130M/1291 cenwave because it is the cenwave with the widest profile for which observations are allowed in grating G130M. That profile will therefore cover the width in the detector covered by the other exposures.
Prior to the submission of this program all LP5 SIAF, aperture mechnism positions, TA subarray, and foci must have been installed.

There is no special commanding in this program.

Visit

Proposal 16432, ACQ/SEARCH TEST (01), completed Wed Sep 29 17:01:29 GMT 2021

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%; ORIENT 152.9D TO 153.1 D; BETWEEN 28-FEB-2021:00:00:00 AND 09-MAR-2021:00:00:00

Comments: ACQ/SEARCH Test. The target is AVZ18 (the SMOV TA target). 1-orbit.

For a 3x3x1.1" spiral pattern, the telescope slew is [AD,XD]

0.00	*0.00*
1.10	*0.00*
1.10	*1.10*
0.00	*1.10*
-1.10	*1.10*
-1.10	*0.00*
-1.10	*-1.10*
0.00	*-1.10*
1.10	*-1.10*

*We want the ~same S/N for each spectrum in the pattern, the arms of the central cross are at 1.1" offset, the corners are sqrt(2)*1.1".*
The centered count rate is ~ 2350 counts/s. The throughput at 1.1" offset is 58.1% of center, whereas at 1.55" it is 28.6% To be balanced, we'll use 22 sec for the sides, and 44s for the corners. This should be FUVA/B total counts of 45k counts/segment for each.

The ORIENT angle is constrained to 40.5 degrees +/- 0.5 degree. First we use pos-targs to simulate the 3x3x1.1" pattern, taking TAGFLASHed spectra at each location. We then perform a 3x3x1.1" ACQ/SEARCH on the centered target. We then offset the target 1" in XD and 1" in AD and perform a 3x3x1.767" ACQ/SEARCH and then a 2x2x1.767" ACQ/SEARCH on the target.

The data range for this visit is from 15 NOV 2020 to 23 NOV 2020.

Diagnostics

(ACQ/SEARCH TEST (01)) Warning (Orbit Planner): COS EXPOSURE TIME ROUNDED DOWN TO NEAREST 0.1 SECONDS

(ACQ/SEARCH TEST (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(ACQ/SEARCH TEST (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(ACQ/SEARCH TEST (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(ACQ/SEARCH TEST (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	AZV18	RA: 00 47 12.1700 (11.8007083d)	Proper Motion RA: -0.0003 sec of time/yr	V=12.48	Reference Frame: ICRS
		Dec: -73 06 32.68 (-73.10908d)	Proper Motion Dec: -0.0035 arcsec/yr	(B-V)=+0.04	
		Equinox: J2000	Epoch of Position: 2000		

Comments: B2Ia, Magellanic Clouds. B2Ia, Magellanic Clouds. Nominal ETC exposure times derived from previous COS + IUE spectrum.
Category=STAR
Description=[B0-B2 III-I]
Extended=NO

(11)	AZV18-OFFSET+1AD+1XD-OR+1.4OFF	Offset from AZV18		V=12.48	Offset Position (AZV18-OFFSET+1AD+1XD-OR+1.4OFF)
		RA Offset: 0.001205 Degrees		(B-V)=+0.04	
		Dec Offset: 0.64204 Arcsec			

Comments: This target is offset by +1" in both AD (X) and XD (Y), so sqrt(2)=1.414" total offset. Note than the AZV18 offset is (AD,XD)=(-1",-1") this moves AV18 in [AD,XD] of [+1,+1]
Orient is constrained to 40.5 +/- 0.5 degrees.
From the geometry of COS, going from offsets in AD and XD to offsets in ra and dec:

*Delta(dec) = Delta(AD)*cos(ORIENT - 45) + Delta(XD)*cos(ORIENT - 135) will yield the result in arcseconds, which is what APT wants.*
*Delta(RA) = (Delta(AD)*sin(ORIENT - 45) + Delta(XD)*sin(ORIENT - 135))/(3600. * cos(dec)) will yield the result in decimal degrees of RA, which is what APT wants.*
Category=STAR
Description=[B0-B2 III-I]
Extended=NO

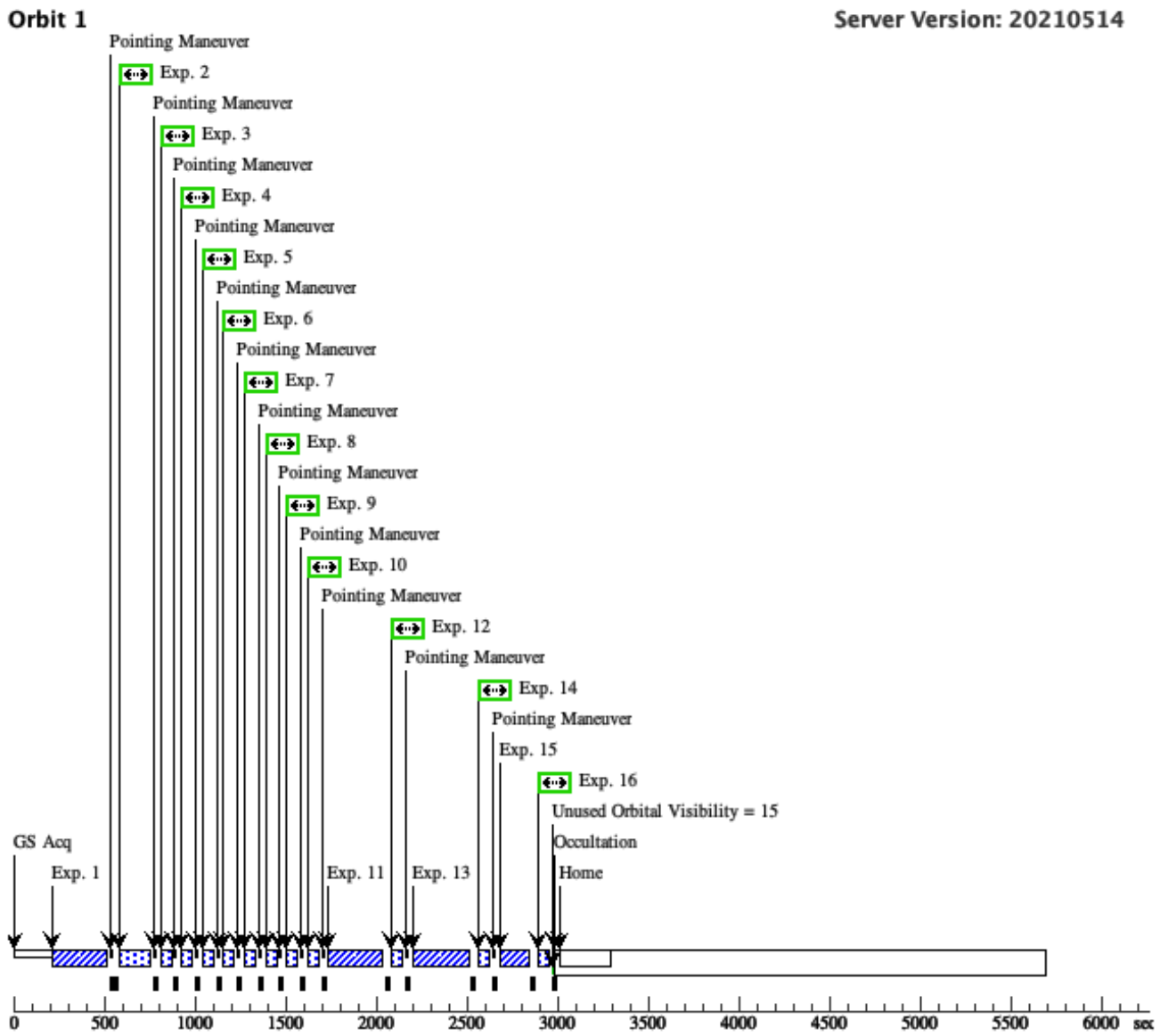
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	2 nuv a/im (COS.ta.904984)	(1) AZV18	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				32 Secs (32 Secs) *[==>]*	***[1]***
	Comments: NUV ACQ/IMAGE with BOA+MIRRORA to refine centering. COS.ta.904984 uses a previous COS spectrum plus an IUE spectrum. This ETC25.1.1 gives S/N=60 in 27.4 seconds, we go for 32s just be to sure. The previous ACQ/IMAGEs in 13636 gave a S/N of 62.6 is 31 seconds (after background subtraction)								
2	G130M - BASELINE SPECTRUM (COS.sp.904989)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=5000; FP-POS=3; FLASH=S0080D030; LIFETIME-POS=LP5		Sequence 2-10 Non-Int in ACQ/SEARCH TEST (01)	30 Secs (2.1 Secs) *[==>2.0999999999999996 Secs]*	***[1]***
	Comments: Spectrum of source to define correct location of star when it is centered in NUV. The ETC uses a previous COS spectrum from 13636 . This ETC run (COS.sp.904989) is for 22 seconds and indicates that we should expect a S/N of 3/RE with a BT < 1000(2/3) = 666, we use 500 to be safe. Tagflash sequence is 30s on.*								
3	G130M - POSTARG + SPECTRUM1 (1.1,0) (COS.sp.904989)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=5000; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	POS TARG 1.1,0	Sequence 2-10 Non-Int in ACQ/SEARCH TEST (01)	22 Secs (14 Secs) *[==>14.0 Secs]*	***[1]***
	Comments: POSTARG TO SIMULATE ACQ/SEARCH. S/N = 60 is reached in 2 seconds. Observe for 22 seconds. (~45k total counts(A+B), centered). at 1.1" in off, the throughput will be 58% total counts should be ~ 30k,								
4	G130M - POSTARG + SPECTRUM2 (1.1,1.1) (Corner) (COS.sp.904989)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=5000; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	POS TARG 1.1,1.1	Sequence 2-10 Non-Int in ACQ/SEARCH TEST (01)	44 Secs (14 Secs) *[==>14.0 Secs]*	***[1]***
	Comments: POSTARG TO SIMULATE ACQ/SEARCH. S/N = 60 is reached in 2 seconds. Observe for 44 seconds. (~100000 total counts(A+B), centered). 1.55" it is 28.6 %. Total counts should be ~ 30k,								
5	G130M - POSTARG + SPECTRUM3 (0,1.1) (COS.sp.904989)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=5000; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	POS TARG 0,1.1	Sequence 2-10 Non-Int in ACQ/SEARCH TEST (01)	22 Secs (14 Secs) *[==>14.0 Secs]*	***[1]***
	Comments: POSTARG TO SIMULATE ACQ/SEARCH this is a side, so see exporuse 01.003 for comments								
6	G130M - POSTARG + SPECTRUM4 (-1.1,1.1) (Corner) (COS.sp.904989)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=5000; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	POS TARG -1.1,1.1	Sequence 2-10 Non-Int in ACQ/SEARCH TEST (01)	44 Secs (14 Secs) *[==>14.0 Secs]*	***[1]***
	Comments: POSTARG TO SIMULATE ACQ/SEARCH this is a corner, so see exporuse 01.004 for comments								

7	G130M - POSTARG + SPECTRUM5 (-1.1,0) (COS.sp.904989)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=500; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	POS TARG -1.1,0	Sequence 2-10 Non-Int in ACQ/SEARCH TEST (01)	22 Secs (14 Secs) *[==>14.0 Secs]*	***[1]***
Comments: POSTARG TO SIMULATE ACQ/SEARCH this is a side, so see exporuse 01.003 for comments									
8	G130M - POSTARG + SPECTRUM6 (-1.1,-1.1) (Corner) (COS.sp.904989)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=500; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	POS TARG -1.1,-1.1	Sequence 2-10 Non-Int in ACQ/SEARCH TEST (01)	44 Secs (14 Secs) *[==>14.0 Secs]*	***[1]***
Comments: POSTARG TO SIMULATE ACQ/SEARCH this is a corner, so see exporuse 01.004 for comments									
9	G130M - POSTARG + SPECTRUM7 (0,-1.1) (COS.sp.904989)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=500; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	POS TARG 0,-1.1	Sequence 2-10 Non-Int in ACQ/SEARCH TEST (01)	22 Secs (14 Secs) *[==>14.0 Secs]*	***[1]***
Comments: POSTARG TO SIMULATE ACQ/SEARCH this is a side, so see exporuse 01.003 for comments									
10	G130M - POSTARG + SPECTRUM8 (+1.1,-1.1) (Corner) (COS.sp.904989)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=500; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	POS TARG 1.1,-1.1	Sequence 2-10 Non-Int in ACQ/SEARCH TEST (01)	44 Secs (14 Secs) *[==>14.0 Secs]*	***[1]***
Comments: POSTARG TO SIMULATE ACQ/SEARCH this is a corner, so see exporuse 01.004 for comments									
11	G130M - ACQ/SEARCH (COS.sa.904990)	(1) AZV18	COS/FUV, ACQ/SEARCH, PSA	G130M 1291 A	SCAN-SIZE=3; STEP-SIZE=1.1; LIFETIME-POS=LP5		Sequence 11-12 Non-Int in ACQ/SEARCH TEST (01)	2 Secs (2 Secs) *[==>]*	***[1]***
Comments: 3x3x1.1" ACQ/SEARCH on the centered target. COS.sa.904990. S/N = 60 is reached in 1.0 (A+B) seconds, we go for 2s This is performed on the actual target. A similar ACQ/SEARCH in 13636 found a S/N of 65 in 2s									
12	G130M - BASELINE SPECTRUM (COS.sp.904989)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=500; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5		Sequence 11-12 Non-Int in ACQ/SEARCH TEST (01)	24 Secs (14 Secs) *[==>14.0 Secs]*	***[1]***
Comments: Spectrum of source to verify accurate centering. The ETC uses a previous COS spectrum from 13636 . This ETC run (COS.sp.904989) is for 22 seconds and indicates that we should expect a S/N of 3/RE with a BT < 1000(2/3) = 666, we use 500 to be safe. FLASH=YES*									
13	G130M - ACQ/SEARCH (COS.sa.904990)	(11) AZV18-OFFSET+1AD+1XD-OR+1.4OFF	COS/FUV, ACQ/SEARCH, PSA	G130M 1291 A	SCAN-SIZE=3; STEP-SIZE=1.767; LIFETIME-POS=LP5		Sequence 13-14 Non-Int in ACQ/SEARCH TEST (01)	2 Secs (2 Secs) *[==>]*	***[1]***
Comments: 3x3x1.767" ACQ/SEARCH. COS.sa.904990. S/N = 60 is reached in 1.0 (A+B) seconds, we go for 2s. This is performed on the actual target. A similar ACQ/SEARCH in 13636 found a S/N of 65 in 2s This is performed on the fictious target offset in [AD,XD} by [+1,+1]". The target will be 1/3 vignetted, in the center search position, but that's ok, that's what we want.									

14	G130M - BASELINE SPECTRUM (COS.sp.904989)	(11) AZV18-OFFSET+1AD+1XD-OR+1.4OFF	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=500; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	Sequence 13-14 Non-Int in ACQ/SEARCH TEST (01)	24 Secs (14 Secs) *[==>14.0 Secs]*	***[1]***
	Comments: Spectrum of source to verify accurate centering. The ETC uses a previous COS spectrum from 13636 . This ETC run (COS.sp.904989) is for 22 seconds and indicates that we should expect a S/N of 3/RE with a BT < 1000(2/3) = 666, we use 500 to be safe. FLASH=YES*							
15	G130M - ACQ/SEARCH (COS.sa.904990)	(1) AZV18	COS/FUV, ACQ/SEARCH, PSA	G130M 1291 A	SCAN-SIZE=2; STEP-SIZE=1.767; LIFETIME-POS=LP5	Sequence 15-16 Non-Int in ACQ/SEARCH TEST (01)	2 Secs (2 Secs) *[==>]*	***[1]***
	Comments: 2x2x1.767" ACQ/SEARCH. COS.sa.904990. S/N = 60 is reached in 1.0 (A+B) seconds, we go for 2s. This is performed on the actual target. A similar ACQ/SEARCH in 13636 found a S/N of 65 in 2s This is performed on the fictious target offset in [AD,XD} by [-1,-1]". The target will be 1/3 vignetted, in the center search position, but that's ok, that's what we want							
16	G130M - BASELINE SPECTRUM (COS.sp.904989)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=500; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	Sequence 15-16 Non-Int in ACQ/SEARCH TEST (01)	24 Secs (14 Secs) *[==>14.0 Secs]*	***[1]***
	Comments: Spectrum of source to verify accurate centering. The ETC uses a previous COS spectrum from 13636 . This ETC run (COS.sp.904989) is for 22 seconds and indicates that we should expect a S/N of 3/RE with a BT < 1000(2/3) = 666, we use 500 to be safe. FLASH=YES*							

Orbit Structure



Visit

Proposal 16432, ACQ/PEAKD TEST (02), completed Wed Sep 29 17:01:29 GMT 2021

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%; ORIENT 184.9D TO 185.1 D; BETWEEN 03-APR-2021:00:00:00 AND 13-APR-2021:00:00:00

Comments: We simulate a 5x0.8" ACQ/PEAKD taking short spectra. We start with the centered (0) position then go to -1.6" in X and proceed in steps of 0.8" out to +1.6" X. We flash the lamp at all positions. This will allow up to verify that the TA subarrays are correctly preventing geocoronal lines and hot spots from affecting the ACQ/PEAKD algorithm.

We then perform an actual 5x0.8" ACQ/PEAKD on the centered target, then attempt a 3x1.2" ACQ/PEAKD on a target offset by +0.3", then a 3x1.3" offset by -0.7".

The ORIENT angle is constrained to 185 +/- 0.1 degrees

In this visit we take a 30s exposure to be the baseline value, corresponding to SN~3.5 per resel. ETC calculation COS.sp.1483195
We balance the POSTARG'd spectra by the expected throughput (which is a function of radius)

OFFSET	*%LOSS*	*ET equivalent/second ET*	
0.00	*0.00*	*1.00*	*30s*
0.80	*20.00*	*1.25*	*40s*
1.60	*73.33*	*3.75*	*100s*

Diagnostics

(ACQ/PEAKD TEST (02)) Warning (Form): COS ACQ/PEAKD exposure should be preceded by an ACQ/PEAKXD exposure in the Visit.

(ACQ/PEAKD TEST (02)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(ACQ/PEAKD TEST (02)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	AZV18	RA: 00 47 12.1700 (11.8007083d)	Proper Motion RA: -0.0003 sec of time/yr	V=12.48	Reference Frame: ICRS
		Dec: -73 06 32.68 (-73.10908d)	Proper Motion Dec: -0.0035 arcsec/yr	(B-V)=+0.04	
		Equinox: J2000	Epoch of Position: 2000		
Comments: B2Ia, Magellanic Clouds. B2Ia, Magellanic Clouds. Nominal ETC exposure times derived from previous COS + IUE spectrum. *Category=STAR* *Description=[B0-B2 III-I]* *Extended=NO*					
(21)	AZV18-OFFSET-AD-0.3	Offset from AZV18		V=12.48	Offset Position (AZV18-OFFSET-AD-0.3)
		RA Offset: -1.84E-4 Degrees		(B-V)=+0.04	
		Dec Offset: 0.229813 Arcsec			
Comments: This target is offset -0.3" in +AD direction. ORIENT is constrained to 185 +/- 0.1 degrees *Category=STAR* *Description=[B0-B2 III-I]* *Extended=NO*					
(22)	AZV18-OFFSET-AD+0.4	Offset from AZV18		V=12.48	Offset Position (AZV18-OFFSET-AD+0.4)
		RA Offset: 5.6E-5 Degrees		(B-V)=+0.04	
		Dec Offset: -0.206418 Arcsec			
Comments: This target is offset +0.4" in the AD direction. Orient must be 185 +/-0.1 degrees *Category=STAR* *Description=[B0-B2 III-I]* *Extended=NO*					

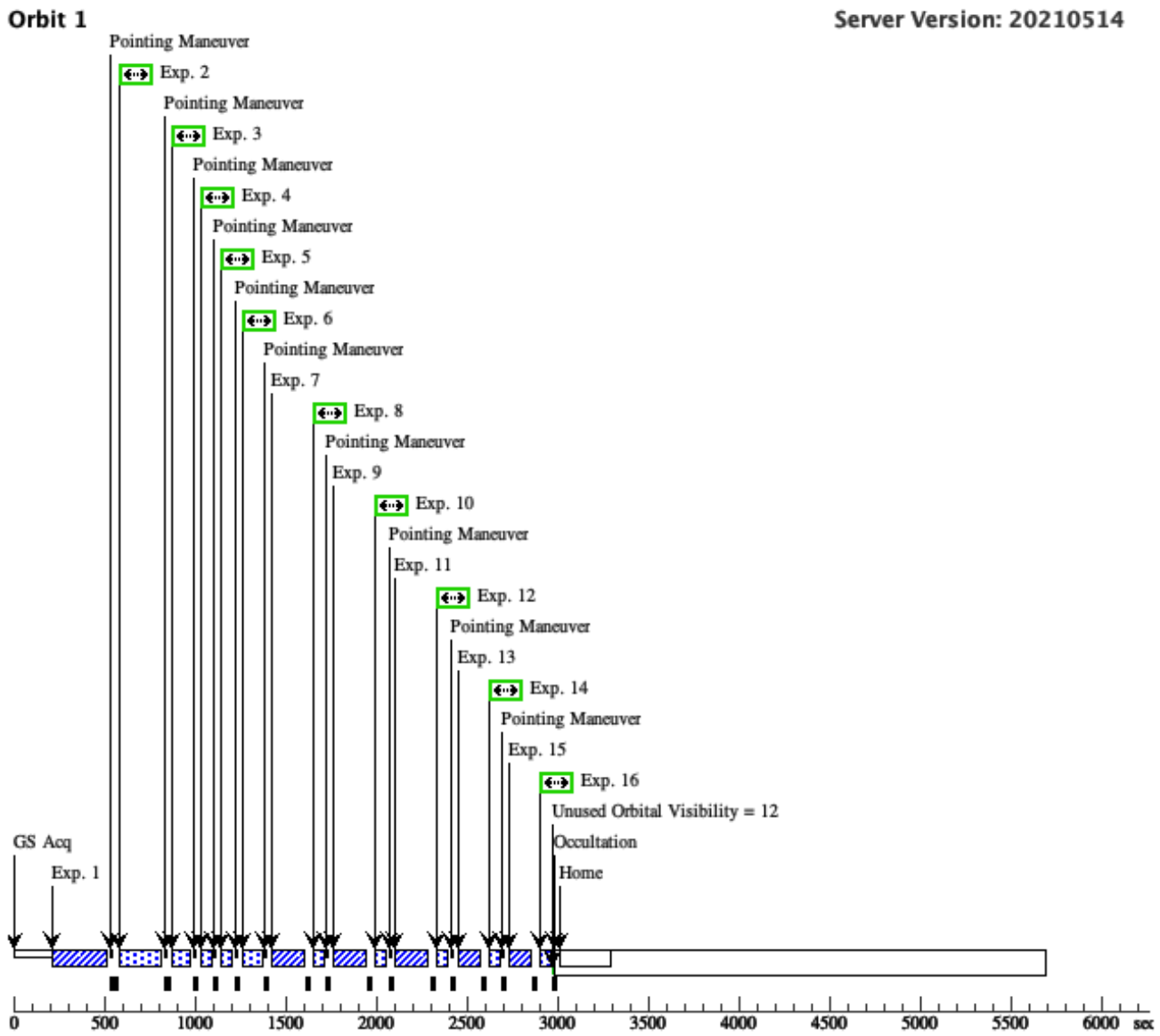
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	2 nuv a/im (COS.ta.904984)	(1) AZV18	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				32 Secs (32 Secs) *[==>]*	***[1]***
	Comments: NUV ACQ/IMAGE with BOA+MIRRORA to refine centering. COS.ta.904984 uses a previous COS spectrum plus an IUE spectrum. This ETC25.1.1 gives S/N=60 in 27.4 seconds, we go for 31s just be to sure. The previous ACQ/IMAGEs in 13636 gave a S/N of 62.6 is 31 seconds (after background subtraction)								
2	G130M/1327- BASELINE SPECTRUM (COS.sp.1483195)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=500; FP-POS=3; FLASH=S0040D025; WAVECAL=YES; LIFETIME-POS=LP5		Sequence 2-6 Non-Int in ACQ/PEAKD TEST (02)	100 Secs (61 Secs) *[==>61.0 Secs]*	***[1]***
	Comments: Spectrum of source to define correct location of star when it is centered in PSA BT=100(2/3) = ~666, we us 500. This will get us S/N~3 per RE with 25s lamp flash*								
3	G130M - POSTARG + SPECTRUM1 (-1.6) (COS.sp.1483195)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=600; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	POS TARG -1.6,0	Sequence 2-6 Non-Int in ACQ/PEAKD TEST (02)	90 Secs (51 Secs) *[==>51.0 Secs]*	***[1]***
	Comments: POSTARG TO SIMULATE 5x0.8"" ACQ/PEAKD. This is the x= -1.6 " position. S/N = 60 is reached in 2 seconds (per segment). The vignetting at 1.6" is73 %, 90 seconds achieves the same SN as the 30s exposures at POSTARG +/- 0.8.								
4	G130M - POSTARG + SPECTRUM3 (-0.8) (COS.sp.1483195)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=600; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	POS TARG -0.8,0	Sequence 2-6 Non-Int in ACQ/PEAKD TEST (02)	40 Secs (12 Secs) *[==>12.0 Secs]*	***[1]***
	Comments: POSTARG TO SIMULATE 5x0.8"" ACQ/PEAKD. This is the x= -0.8 " position. S/N = 60 is reached in 2 seconds (per segment). The vignetting at 0.8" is 20%, To achieve the same S/N as the baseline 30s exposure, we need 40s								
5	G130M - POSTARG + SPECTRUM7 (0.8) (COS.sp.1483195)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=600; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	POS TARG 0.8,0	Sequence 2-6 Non-Int in ACQ/PEAKD TEST (02)	40 Secs (12 Secs) *[==>12.0 Secs]*	***[1]***
	Comments: POSTARG TO SIMULATE 5x0.8"" ACQ/PEAKD. This is the x= +0.8 " position. S/N = 60 is reached in 2 seconds (per segment). The vignetting at 0.8" is 20%, To achieve the same S/N as the baseline 30s exposure, we need 40s								
6	G130M - POSTARG + SPECTRUM8 (1.6) (COS.sp.1483195)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=600; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	POS TARG 1.6,0	Sequence 2-6 Non-Int in ACQ/PEAKD TEST (02)	100 Secs (61 Secs) *[==>61.0 Secs]*	***[1]***
	Comments: POSTARG TO SIMULATE 5x0.8"" ACQ/PEAKD. This is the x= +1.6 " position. S/N = 60 is reached in 2 seconds (per segment). The vignetting at 1.6" is73 %, To achieve the same S/N as the baseline 30s exposure, we need 100s								

7	G130M - ACQ/PEAKD (COS.sa.1483201)	(1) AZV18	COS/FUV, ACQ/PEAKD, PSA	G130M 1291 A	NUM-POS=5; STEP-SIZE=0.8; LIFETIME-POS=LP5	Sequence 7-8 Non-Int in ACQ/PEAKD TEST (02)	5 Secs (5 Secs) *[==>]*	***[1]***
Comments: ACQ/PEAKD of a centered target on the same 5x0.8"" pattern. S/N = 60 is reached in 2 seconds on each segement								
8	G130M - BASELINE SPECTRUM (COS.sp.1483195)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=500; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	Sequence 7-8 Non-Int in ACQ/PEAKD TEST (02)	30 Secs (12 Secs) *[==>12.0 Secs]*	***[1]***
Comments: Confirmation Spectrum after the PEAKD. BT=100(2/3) = ~666, we us 500. This will get us S/N~3 per RE with standard lamp flash*								
9	G130M - ACQ/PEAKD (COS.sa.1483201)	(21) AZV18-OFFSET-AD-0.3	COS/FUV, ACQ/PEAKD, PSA	G130M 1291 A	NUM-POS=5; STEP-SIZE=0.8; LIFETIME-POS=LP5	Sequence 9-10 Non-Int in ACQ/PEAKD TEST (02)	5 Secs (5 Secs) *[==>]*	***[1]***
Comments: 5x0.8" ACQ/PEAKD on an off centered target. The target is defined 0.3" in the +AD direction from the actual target, so the target will actually now be 0.3" off in the -AD direction.								
10	G130M - BASELINE SPECTRUM (COS.sp.1483195)	(21) AZV18-OFFSET-AD-0.3	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=500; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	Sequence 9-10 Non-Int in ACQ/PEAKD TEST (02)	30 Secs (12 Secs) *[==>12.0 Secs]*	***[1]***
Comments: Confirmation spectrum after the ACQ/PEAKD. Confirmation Spectrum after the PEAKD. BT=100(2/3) = ~666, we us 500. This will get us S/N~3 per RE with standard lamp flash*								
11	G130M - ACQ/PEAKD (COS.sa.1483201)	(22) AZV18-OFFSET-AD+0.4	COS/FUV, ACQ/PEAKD, PSA	G130M 1291 A	NUM-POS=5; STEP-SIZE=0.9; LIFETIME-POS=LP5	Sequence 11-12 Non-Int in ACQ/PEAKD TEST (02)	5 Secs (5 Secs) *[==>]*	***[1]***
Comments: 5x0.9" ACQ/PEAKD on an off centered target, this time the target is 0.7" off to the +AD. (We just centered on the -0.3 position, now we are at +0.4")								
12	G130M - BASELINE SPECTRUM (COS.sp.1483195)	(22) AZV18-OFFSET-AD+0.4	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=500; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	Sequence 11-12 Non-Int in ACQ/PEAKD TEST (02)	30 Secs (12 Secs) *[==>12.0 Secs]*	***[1]***
Comments: Confirmation spectrum after the ACQ/PEAKD. Confirmation Spectrum after the PEAKD. BT=100(2/3) = ~666, we us 500. This will get us S/N~3 per RE with standard lamp flash*								
13	G130M - ACQ/PEAKD (COS.sa.1483201)	(21) AZV18-OFFSET-AD-0.3	COS/FUV, ACQ/PEAKD, PSA	G130M 1291 A	NUM-POS=3; STEP-SIZE=1.2; LIFETIME-POS=LP5	Sequence 13-14 Non-Int in ACQ/PEAKD TEST (02)	5 Secs (5 Secs) *[==>]*	***[1]***
Comments: 3x1.2" ACQ/PEAKD on an off centered target. The target is 0.7" in the -AD direction from the actual target. (We just centered on the +0.4 position, now we are at -0.3")								
14	G130M - BASELINE SPECTRUM (COS.sp.1483195)	(21) AZV18-OFFSET-AD-0.3	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=500; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	Sequence 13-14 Non-Int in ACQ/PEAKD TEST (02)	30 Secs (12 Secs) *[==>12.0 Secs]*	***[1]***
Comments: Confirmation spectrum after the ACQ/PEAKD. Confirmation Spectrum after the PEAKD. BT=100(2/3) = ~666, we us 500. This will get us S/N~3 per RE with standard lamp flash*								

	15	G130M - ACQ/PEAKD (COS.sa.1483201)	(1) AZV18	COS/FUV, ACQ/PEAKD, PSA	G130M 1291 A	NUM-POS=3; STEP-SIZE=1.3; LIFETIME-POS=LP5	Sequence 15-16 Non-Int in ACQ/PEAKD TEST (02)	5 Secs (5 Secs) *[==>]*	***[1]***
		Comments: 7x0.55" ACQ/PEAKD on an off centered target. We just centered on the -0.3" target, now we are back to the center, so the target is at +0.3"							
	16	G130M - BASELINE SPECTRUM (COS.sp.1483195)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=500; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	Sequence 15-16 Non-Int in ACQ/PEAKD TEST (02)	30 Secs (12 Secs) *[==>12.0 Secs]*	***[1]***
		Comments: Confirmation spectrum after the ACQ/PEAKD. Confirmation Spectrum after the PEAKD. BT=100(2/3) = ~666, we us 500. This will get us S/N~3 per RE with standard lamp flash*							

Orbit Structure



Visit

Proposal 16432, ACQ/PEAKXD TEST G130M/1291 (03), completed Wed Sep 29 17:01:29 GMT 2021

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%; ORIENT 219.9D TO 220.1 D; BETWEEN 15-MAY-2021:00:00:00 AND 25-MAY-2021:00:00:00

Comments: ACQ/PEAKXD Test for G130M/1291. The target is AVZ18. After obtaining a good spectrum of the centered target, take spectra at the following positions (-1.6,-0.8,+0.8,+1.6) " in the XD direction. The > +/- 0.5" offsets have expanded exposure times to compensate for vignetting. To maintain S/N, the scale factor for the exposure times should be :

OFFSET	*%LOSS*	*ET equivalent/second"*
0.00	*0.00*	*1.00*
0.80	*22.58*	*1.29*
1.60	*73.33*	*3.75*

We expect 1100 FUVA counts/sec over the ~2300 RE, the target spectrum is ~flat, so we get 2 count/RE/s. To get 50 counts/RE, we need 25s. We have time for 35s or 45s at +/- 0.8", and ~130s at +/- 1.6" After obtaining the offset spectra, we then proceed to test PEAKXD with targets offsets by +/-0.5, +/-0.8" in the XD.

ORIENT should be 150.5+/-0.5 degrees

Diagnostics

(ACQ/PEAKXD TEST G130M/1291 (03)) Warning (Form): COS ACQ/PEAKXD exposure should be followed by an ACQ/PEAKD exposure in the Visit.

(ACQ/PEAKXD TEST G130M/1291 (03)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(ACQ/PEAKXD TEST G130M/1291 (03)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	AZV18	RA: 00 47 12.1700 (11.8007083d)	Proper Motion RA: -0.0003 sec of time/yr	V=12.48	Reference Frame: ICRS
		Dec: -73 06 32.68 (-73.10908d)	Proper Motion Dec: -0.0035 arcsec/yr	(B-V)=+0.04	
		Equinox: J2000	Epoch of Position: 2000		

Comments: B2Ia, Magellanic Clouds. B2Ia, Magellanic Clouds. Nominal ETC exposure times derived from previous COS + IUE spectrum.
Category=STAR
Description=[B0-B2 III-I]
Extended=NO

(31)	AZV18-OFFSET-XD+0.5	Offset from AZV18		V=12.48	Offset Position (AZV18-OFFSET-XD+0.5)
		RA Offset: 4.76E-4 Degrees		(B-V)=+0.04	
		Dec Offset: 0.043578 Arcsec			

Comments: This target is offset +0.5" in the XD direction. The orient angle must be 220 +/- 0.1
Category=STAR
Description=[B0-B2 III-I]
Extended=NO

(32)	AZV18-OFFSET-XD+0.8	Offset from AZV18		V=12.48	Offset Position (AZV18-OFFSET-XD+0.8)
		RA Offset: 7.62E-4 Degrees		(B-V)=+0.04	
		Dec Offset: 0.069725 Arcsec			

Comments: This target is offset +0.8" in the XD direction. Orient must be 220 +/- 0.1.
Category=STAR
Description=[B0-B2 III-I]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	BOA/MIRRORA ACQ/IMAGE (COS.ta.904984)	(1) AZV18	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				36 Secs (36 Secs) *[==>]*	***[1]***
	Comments: NUV ACQ/IMAGE with BOA+MIRRORA to refine centering. COS.ta.904984 uses a previous COS+IUE spectrum. This ETC25.1.1 gives S/N=60 in 27.4 seconds, we go for 36s just be to sure. The previous ACQ/IMAGEs in 13636 gave a S/N of 62.6 is 31 seconds (after background subtraction)								
2	G130M - BASELINE SPECTRUM (COS.sp.906443)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=500; FP-POS=3; FLASH=S0200D030; LIFETIME-POS=LP5		Sequence 2-8 Non-Int in ACQ/PEAKXD TEST G130M/1291 (03)	35 Secs (23 Secs) *[==>23.0 Secs]*	***[1]***
	*Comments: Spectrum of source to define correct location of star when it is centered using NUV ACQ/IMAGE. COS.sp.906443 Exposure time (seconds) = 35 at wavelength 1310A gives: SNR = 3.8 (per resolution element). BT=2/3 * 1000 = < 666*								
3	G130M - POSTARG + SPECTRUM1 (-1.6) (COS.sp.906443)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=1200; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	POS TARG 0,-1.6	Sequence 2-8 Non-Int in ACQ/PEAKXD TEST G130M/1291 (03)	130 Secs (118 Secs) *[==>118.0 Secs]*	***[1]***
	*Comments: POSTARG TO Move to Y=-1.6. The vignetting here is 73%, so to match the 34s in 03.002, we need 35*3.75 = ~130s*								
4	G130M - POSTARG + SPECTRUM2 (-0.8) (COS.sp.906443)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=650; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	POS TARG 0,-0.8	Sequence 2-8 Non-Int in ACQ/PEAKXD TEST G130M/1291 (03)	46 Secs (34 Secs) *[==>34.0 Secs]*	***[1]***
	*Comments: POSTARG TO Move to Y=-0.8. The vignetting here is 23%, so to match the 34s in 03.002, we need 35*1.3 = 46s. BT=650.*								
5	G130M - POSTARG + SPECTRUM3 (+0.8) (COS.sp.906443)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=650; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	POS TARG 0,0.8	Sequence 2-8 Non-Int in ACQ/PEAKXD TEST G130M/1291 (03)	46 Secs (34 Secs) *[==>34.0 Secs]*	***[1]***
	Comments: Same as 03.004, but at +0.8"								
6	G130M - POSTARG + SPECTRUM4 (+1.6) (COS.sp.906443)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=1200; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	POS TARG 0,1.6	Sequence 2-8 Non-Int in ACQ/PEAKXD TEST G130M/1291 (03)	130 Secs (118 Secs) *[==>118.0 Secs]*	***[1]***
	Comments: Same as 03.003, but at 1.6"								

7	G130M - PEAKXD - Centered (COS.sa.904990)	(1) AZV18	COS/FUV, ACQ/PEAKXD, PSA	G130M 1291 A	LIFETIME-POS=LP5; NUM-POS=5; STEP-SIZE=0.8	Sequence 2-8 Non-Int in ACQ/PEAKXD TEST G130M/1291 (03)	2 Secs (2 Secs) *[==>]*	***[1]***

Comments: COS.sa.904990 Requested Signal/Noise Ratio = 40.000 gives: Time = 0.8984 seconds
Time Required for Requested SNR in Segment A only: 1.4029
Time Required for Requested SNR in Segment B only: 2.4982

The target should only move slightly (ACQ/IMAGE error and counting uncertainty), unless there is residual pointing error from the POS-TARGs.

8	G130M - BASELINE SPECTRUM (COS.sp.906443)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=500; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	Sequence 2-8 Non-Int in ACQ/PEAKXD TEST G130M/1291 (03)	35 Secs (23 Secs) *[==>23.0 Secs]*	***[1]***

*Comments: Spectrum of source to test previous ACQ/PEAKXD centering. COS.sp.906443 Exposure time (seconds) = 35 at wavelength 1310A gives: SNR = 3.8135 (per resolution element). BT=2/3 * 1000 = < 666*

9	G130M - PEAKXD-XD +0.8 (UP) (COS.sa.904990)	(32) AZV18-OFFSET-XD+0.8	COS/FUV, ACQ/PEAKXD, PSA	G130M 1291 A	LIFETIME-POS=LP5; NUM-POS=3; STEP-SIZE=1.3	Sequence 9-10 Non-Int in ACQ/PEAKXD TEST G130M/1291 (03)	2 Secs (2 Secs) *[==>]*	***[1]***

Comments: ACQ/PEAKXD on the target offset by +0.8".

COS.sa.904990 Requested Signal/Noise Ratio = 40.000 gives: Time = 0.8984 seconds
Time Required for Requested SNR in Segment A only: 1.4029
Time Required for Requested SNR in Segment B only: 2.4982

10	G130M - Confirmation SPECTRUM (COS.sp.906443)	(32) AZV18-OFFSET-XD+0.8	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=500; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	Sequence 9-10 Non-Int in ACQ/PEAKXD TEST G130M/1291 (03)	35 Secs (23 Secs) *[==>23.0 Secs]*	***[1]***

*Comments: Spectrum of source to test previous ACQ/PEAKXD centering. COS.sp.906443 Exposure time (seconds) = 35 at wavelength 1310A gives: SNR = 3.8135 (per resolution element). BT=2/3 * 1000 = < 666*

11	G130M - PEAKXD-XD-0.8 (DOWN) (COS.sa.904990)	(1) AZV18	COS/FUV, ACQ/PEAKXD, PSA	G130M 1291 A	LIFETIME-POS=LP5; NUM-POS=3	Sequence 11-12 Non-Int in ACQ/PEAKXD TEST G130M/1291 (03)	2 Secs (2 Secs) *[==>]*	***[1]***

Comments: Back on original target, -0.8"

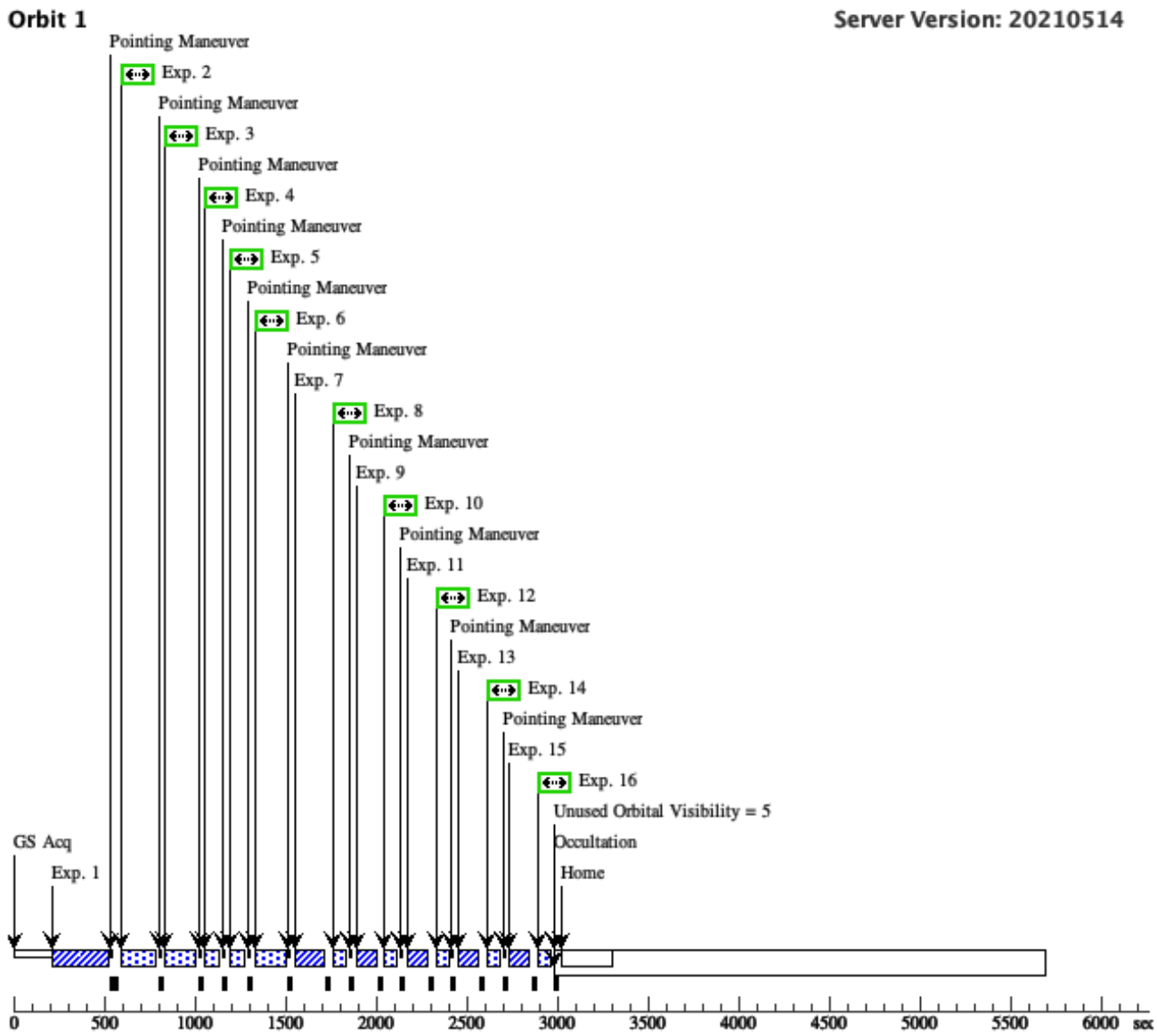
COS.sa.904990 Requested Signal/Noise Ratio = 40.000 gives: Time = 0.8984 seconds
Time Required for Requested SNR in Segment A only: 1.4029
Time Required for Requested SNR in Segment B only: 2.4982

12	G130M - Confirmation SPECTRUM (COS.sp.906443)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=500; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	Sequence 11-12 Non-Int in ACQ/PEAKXD TEST G130M/1291 (03)	35 Secs (23 Secs) *[==>23.0 Secs]*	***[1]***

*Comments: Spectrum of source to test previous ACQ/PEAKXD centering. COS.sp.906443 Exposure time (seconds) = 35 at wavelength 1310A gives: SNR = 3.8135 (per resolution element). BT=2/3 * 1000 = < 666*

13	G130M -PEAKXD- XD +0.5 (COS.sa.904990)	(31) AZV18-OFFSET-XD+0.5	COS/FUV, ACQ/PEAKXD, PSA	G130M 1291 A	LIFETIME-POS=LP5	Sequence 13-14 Non-Int in ACQ/PEAKXD TEST G130M/1291 (03)	2 Secs (2 Secs) *[==>]*	***[1]***
	Comments: ACQ/PEAKXD on the target offset by +0.5". *COS.sa.904990 Requested Signal/Noise Ratio = 40.000 gives: Time = 0.8984 seconds* *Time Required for Requested SNR in Segment A only: 1.4029* *Time Required for Requested SNR in Segment B only: 2.4982*							
14	G130M -Confirmation SPECTRUM (COS.sp.906443)	(31) AZV18-OFFSET-XD+0.5	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=500; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	Sequence 13-14 Non-Int in ACQ/PEAKXD TEST G130M/1291 (03)	35 Secs (23 Secs) *[==>23.0 Secs]*	***[1]***
	*Comments: Spectrum of source to test previous ACQ/PEAKXD centering. COS.sp.906443 Exposure time (seconds) = 35 at wavelength 1310A gives: SNR = 3.8135 (per resolution element). BT=2/3 * 1000 = < 666*							
15	G130M -PEAKXD- XD -0.5 (COS.sa.904990)	(1) AZV18	COS/FUV, ACQ/PEAKXD, PSA	G130M 1291 A	LIFETIME-POS=LP5; NUM-POS=3; STEP-SIZE=1.25	Sequence 15-16 Non-Int in ACQ/PEAKXD TEST G130M/1291 (03)	2 Secs (2 Secs) *[==>]*	***[1]***
	Comments: ACQ/PEAKXD on the target offset by -0.5". *COS.sa.904990 Requested Signal/Noise Ratio = 40.000 gives: Time = 0.8984 seconds* *Time Required for Requested SNR in Segment A only: 1.4029* *Time Required for Requested SNR in Segment B only: 2.4982*							
16	G130M - Confirmation SPECTRUM (COS.sp.906443)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=500; FP-POS=3; FLASH=YES; LIFETIME-POS=LP5	Sequence 15-16 Non-Int in ACQ/PEAKXD TEST G130M/1291 (03)	35 Secs (23 Secs) *[==>23.0 Secs]*	***[1]***
	*Comments: Spectrum of source to test previous ACQ/PEAKXD centering. COS.sp.906443 Exposure time (seconds) = 35 at wavelength 1310A gives: SNR = 3.8135 (per resolution element). BT=2/3 * 1000 = < 666.*							

Orbit Structure



Visit

Proposal 16432, LP 5 Integration Test (04), scheduling Wed Sep 29 17:01:29 GMT 2021

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: ORIENT 74.5D TO 75 D; BETWEEN 04-OCT-2021:00:00:00 AND 06-OCT-2021:00:00:00

Comments: This visit tests all FUV TA modes as defaults on the first day of cycle 29. That is the day that LP5 becomes the default. Orient should be 70.5+/-0.5.
The order of tests is:
NUV acquisition
POSTARG
ACQ/SEARCH
PEAKXD
PEAKD
PEAKXD with offset
PEAKD with offset

ORIENT should be constrained to 74.5 to 75 degrees

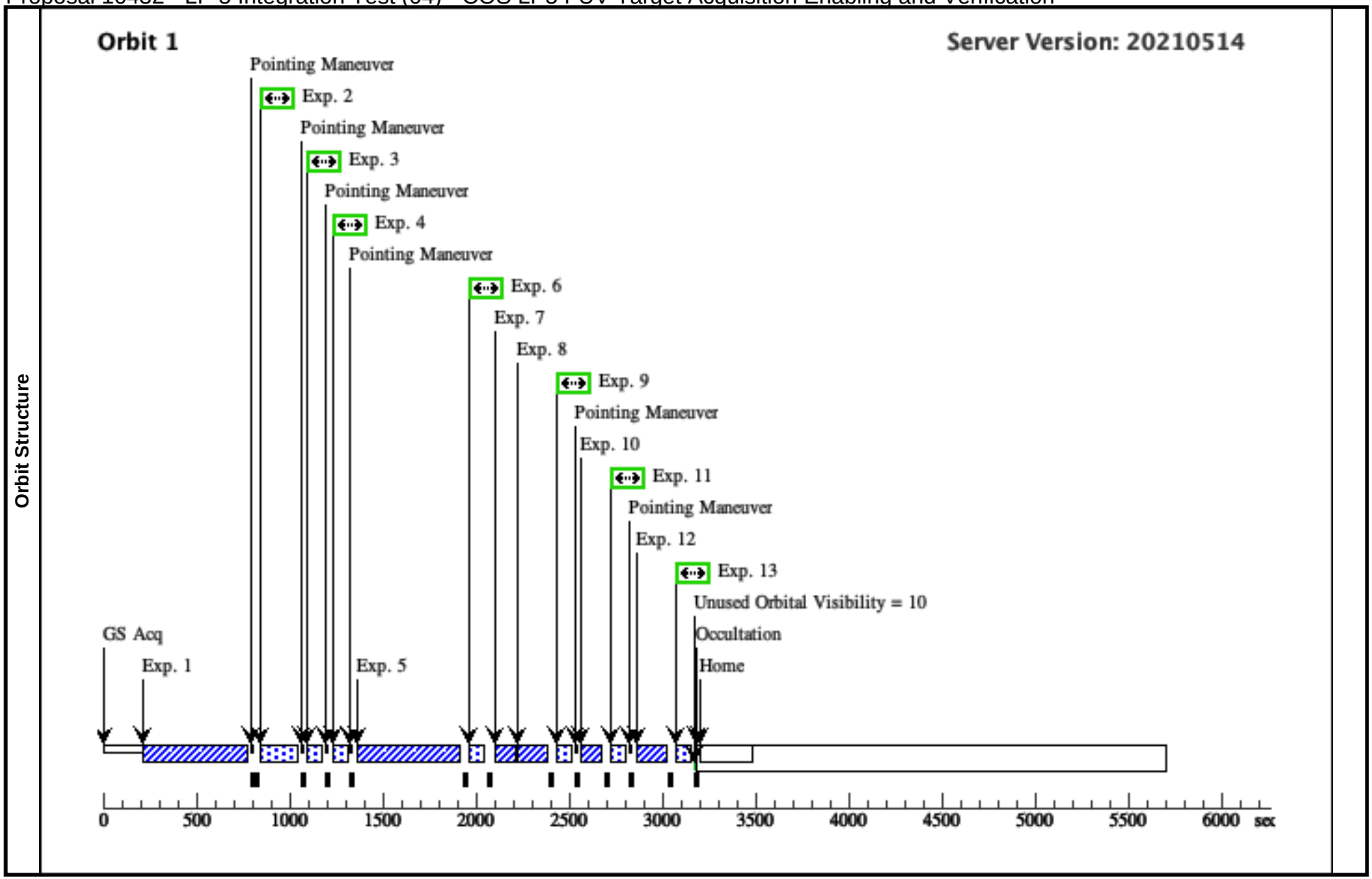
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(6)	WD1657+343	RA: 16 58 51.1200 (254.7130000d) Dec: +34 18 53.30 (34.31481d) Equinox: J2000	Proper Motion RA: 12 mas/yr Proper Motion Dec: -32 mas/yr Epoch of Position: 2000 Radial Velocity: 78 km/sec	V=16.4+/-0.1	Reference Frame: ICRS
	Comments: This object is visible all year. *Proper Motions from 2008ApJS..175..297A and are [12,-32] mas/yr.* *The original proposal used [0.0014 sec of time/yr, -0.0342 "/yr].* *ICRS coord. (ep=J2000) : 16 58 51.12 +34 18 53.3* *The target used is WD1657+343 and the exposure times are based on a spectrum provided by A. Aloisi (extrapolated in wavelength).* *Category=STAR* *Description=[DA]* *Extended=NO*				
(61)	WD1657+343-OFFSET+0.7AD+0.7XD	Offset from WD1657+343 RA Offset: -8.9E-5 Degrees Dec Offset: 0.953945 Arcsec	Radial Velocity: 78 km/sec	V=16.4+/-0.1	Offset Position (WD1657+343-OFFSET+0.7AD+0.7XD)
	Comments: Offset to (Ra, Dec) = (+0.7,+0.7), assuming ORIENT=74.5 *Category=STAR* *Description=[DA]* *Extended=NO*				
(62)	WD1657+343-OFFSET+0.7AD+1.05XD	Offset from WD1657+343 RA Offset: -1.91E-4 Degrees Dec Offset: 1.12629 Arcsec	Radial Velocity: 78 km/sec	V=16.4+/-0.1	Offset Position (WD1657+343-OFFSET+0.7AD+1.05XD)
	Comments: This target is offset +0.35" in the XD direction with respect to target 61, which was the last target to be acquired, so it thinks we are there (61). This is testing position (0",-0.35") in the detector. *The roll angle is 74.5 +/- 1 degree and is valid for OCT 1 and 2, 2021.* *Category=STAR* *Description=[DA]* *Extended=NO*				
(63)	WD1657+343-OFFSET+1.05AD+1.05XD	Offset from WD1657+343 RA Offset: -1.33E-4 Degrees Dec Offset: 1.43092 Arcsec	Radial Velocity: 78 km/sec	V=16.4+/-0.1	Offset Position (WD1657+343-OFFSET+1.05AD+1.05XD)
	Comments: *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	BOA/MIRRORA ACQ/IMAGE (COS.ta.616985)	(6) WD1657+343	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				162 Secs (162 Secs) *[==>]*	***[1]***
Comments: NUV ACQ/IMAGE with BOA+MIRRORA to define centering. COS.ta.616985 Requested Signal/Noise Ratio = 60.000 gives: Time = 150 seconds									
2	G130M/1291 spectrum (COS.sp.1464645)	(6) WD1657+343	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=316; LIFETIME-POS=DEF		Sequence 2-4 Non-Int in LP 5 Integration Test (04)	25.0 Secs (31 Secs) *[==>31.0 Secs]*	***[1]***
Comments: Spectrum for baseline comparison after NUV ACQ/IMAGE centering.									
3	POS-TARG (1.0, 0) G130M/1291 spectrum (COS.sp.1464645)	(6) WD1657+343	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=316; LIFETIME-POS=DEF	POS TARG 1.0,0	Sequence 2-4 Non-Int in LP 5 Integration Test (04)	25.0 Secs (31 Secs) *[==>31.0 Secs]*	***[1]***
Comments: Testing POS-TARG in the AD direction									
4	POS-TARG (0, 1.0) G130M/1291 spectrum (COS.sp.1464645)	(6) WD1657+343	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=316; LIFETIME-POS=DEF	POS TARG 0,1.0	Sequence 2-4 Non-Int in LP 5 Integration Test (04)	25.0 Secs (31 Secs) *[==>31.0 Secs]*	***[1]***
Comments: Testing POS-TARG in the XD direction									
5	ACQ/SEARCH offset target (COS.sa.1464651)	(61) WD1657+343-OFFSET+0.7AD+0.7XD	COS/FUV, ACQ/SEARCH, PSA	G130M 1291 A	LIFETIME-POS=DEF; SCAN-SIZE=4		Sequence 5-9 Non-Int in LP 5 Integration Test (04)	2 Secs (2 Secs) *[==>]*	***[1]***
Comments: ACQ/SEARCH starting at position (0.7, 0.7) with respect to the real target.									
6	G130M/1291 spectrum (COS.sp.1464645)	(61) WD1657+343-OFFSET+0.7AD+0.7XD	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=316; LIFETIME-POS=DEF		Sequence 5-9 Non-Int in LP 5 Integration Test (04)	25.0 Secs (31 Secs) *[==>31.0 Secs]*	***[1]***
Comments: Spectrum for baseline comparison after FUV ACQ/SEARCH centering.									
7	PEAKXD after ACQ/SEARCH (COS.sa.1464651)	(61) WD1657+343-OFFSET+0.7AD+0.7XD	COS/FUV, ACQ/PEAKXD, PSA	G130M 1291 A	LIFETIME-POS=DEF		Sequence 5-9 Non-Int in LP 5 Integration Test (04)	2 Secs (2 Secs) *[==>]*	***[1]***
Comments: After centering with ACQ/SEARCH alone, do the PEAKS, which is what is required in a real acquisition.									
8	PEAKD after ACQ/SEARCH (COS.sa.1464672)	(61) WD1657+343-OFFSET+0.7AD+0.7XD	COS/FUV, ACQ/PEAKD, PSA	G130M 1291 A	LIFETIME-POS=DEF; STEP-SIZE=0.9		Sequence 5-9 Non-Int in LP 5 Integration Test (04)	2 Secs (2 Secs) *[==>]*	***[1]***
Comments: FUV PEAKD after FUV PEAKXD, after FUV ACQ/SEARCH									

9	G130M/1291 spectrum (COS.sp.1464645)	(61) WD1657+343-OFFSET+0.7AD+0.7XD	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=316; LIFETIME-POS=DEF	Sequence 5-9 Non-Int in LP 5 Integration Test (04)	25.0 Secs (31 Secs) *[==>31.0 Secs]*	***[1]***
Comments: Spectrum for verification after FUV ACQ/SEARCH, PEAKXD and PEAKD centering. This spectrum should be as well centered as the one after the NUV acquisition.								
10	PEAKXD test offset -0.35 on detector (COS.sa.1464672)	(62) WD1657+343-OFFSET+0.7AD+1.05XD	COS/FUV, ACQ/PEAKXD, PSA	G130M 1291 A	LIFETIME-POS=DEF	Sequence 10-11 Non-Int in LP 5 Integration Test (04)	2 Secs (2 Secs) *[==>]*	***[1]***
Comments: It thinks we were at (0.7, 0.7) on the sky, and centered on the detector. Now go to (0.7, 1.05) on the sky, meaning going down to 0.35 in XD in the detector and re-acquire.								
11	G130M/1291 spectrum (COS.sp.1464645)	(62) WD1657+343-OFFSET+0.7AD+1.05XD	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=316; LIFETIME-POS=DEF	Sequence 10-11 Non-Int in LP 5 Integration Test (04)	25.0 Secs (31 Secs) *[==>31.0 Secs]*	***[1]***
Comments: Spectrum for verification after PEAKXD.								
12	PEAKD test offset +0.5 on detector (COS.sa.1464672)	(63) WD1657+343-OFFSET+1.05AD+1.05XD	COS/FUV, ACQ/PEAKD, PSA	G130M 1291 A	LIFETIME-POS=DEF; STEP-SIZE=0.9	Sequence 12-13 Non-Int in LP 5 Integration Test (04)	2 Secs (2 Secs) *[==>]*	***[1]***
Comments: ;; It thinks we are starting from (0.7, 1.05). Moving to 0.7 in XD puts the target at +0.35 in the detector and then reacquires.								
13	G130M/1291 spectrum (COS.sp.1464645)	(63) WD1657+343-OFFSET+1.05AD+1.05XD	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; BUFFER-TIME=316; LIFETIME-POS=DEF	Sequence 12-13 Non-Int in LP 5 Integration Test (04)	25.0 Secs (31 Secs) *[==>31.0 Secs]*	***[1]***
Comments: Spectrum for verification after FUV PEAKD centering.								


Orbit Structure
Orbit 1
Server Version: 20210514
Pointing Maneuver
Exp. 2
Pointing Maneuver
Exp. 3
Pointing Maneuver
Exp. 4
Pointing Maneuver
Exp. 6
Exp. 7
Exp. 8
Exp. 9
Pointing Maneuver
Exp. 10
Exp. 11
Pointing Maneuver
Exp. 12
Exp. 13
Unused Orbital Visibility = 10
Occultation
Home
GS Acq
Exp. 1
Exp. 5
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec