

# 14907 - COS LP4 FUV Target Acquisition Enabling and Verification

Cycle: 24, 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) AZV18 (11) AZV18-OFFSET+1AD+1XD- OR+1.4OFF	COS/FUV COS/NUV	1	05-Jun-2018 20:00:23.0	yes
02	(1) AZV18 (21) AZV18-OFFSET-AD-0.3 (22) AZV18-OFFSET-AD+0.4	COS/FUV COS/NUV	1	05-Jun-2018 20:00:27.0	yes
03	(1) AZV18 (3) AZV18-OFFSET-XD+0.5 (5) AZV18-OFFSET-XD+0.8	COS/FUV COS/NUV	1	05-Jun-2018 20:00:31.0	yes
04	(1) AZV18 (3) AZV18-OFFSET-XD+0.5 (5) AZV18-OFFSET-XD+0.8	COS/FUV COS/NUV	1	05-Jun-2018 20:00:34.0	yes
05	(1) AZV18 (3) AZV18-OFFSET-XD+0.5 (5) AZV18-OFFSET-XD+0.8	COS/FUV COS/NUV	1	05-Jun-2018 20:00:38.0	yes

Proposal 14907 (STScI Edit Number: 9, Created: Tuesday, June 5, 2018 7:00:51 PM EST) - Overview

Visit	Targets used in Visit	Configurations used in Visit	Orbits Used		OP Current with Visit?
	(6) WD1657+343 (61) WD1657+343-OFFSET-1AD- 1XD-1.4AS	COS/FUV COS/NUV	2	05-Jun-2018 20:00:45.0	yes
	(63) WD1657+343-OFFSET-XD+0.8				
07	(1) AZV18 (3) AZV18-OFFSET-XD+0.5 (5) AZV18-OFFSET-XD+0.8	COS/FUV COS/NUV	1	05-Jun-2018 20:00:49.0	yes

<sup>8</sup> Total Orbits Used

#### **ABSTRACT**

This LP4 program is designed to verify the ability of the LV0058/LV0059 COS FSW to place an isolated point source at the center of the PSA, using FUV dispersed light target acquisition (TA) for COS (LP4-TA-COS). Tests will be performed for all 3 FUV TA modes (ACQ/SEARCH, ACQ/PEAKD, and ACQ/PEAKXD). It is sufficient to test ACQ/SEARCH and ACQ/PEAKD with only one grating, but all three FUV gratings need to be tested for the new (as of LV0054) ACQ/PEAKXD with NUM\_POS>1 (also known internally, and in the spt files, as OPMODE=ACQ/PEAKD(XD) at the Fourth Lifetime Position (LP4). This program is modeled after the LP2 and LP3 versions of this program; 12797 and 13636.

This program has specific visits to test each portion of the FUV spectroscopic TA process. Visits 01-05 will use the target AV18, while Visit 06 will observe (WD1657+343). Both targets are visible year round. For the LP4 enabling, several improvements to APT, the ground system, and the flight software (FSW) have greatly simplified the enabling process. There are now no non-standard exposures, or special commanding, in this program. Specifically;

- 1) We now use the LIFETIME-POS = LP4 functionality in APT & FSW to specify the LP. The old procedure of using LIFETIME-POS = "ALTERNATE" has been removed. FUV LPs are now called out by number (e.g., LP4).
- 2) We will be using the new NUM\_POS > 1 PEAKXD algorithm at LP4 due to large geometric distortions (GD) at the "Y" detector positions of LP4. FUVA is particularly affected by GD rendering the old PEAKXD algorithm unable to center a target to the required XD accuracy at LP4.
- 3) Numerous FSW Patchable constants that were essential for PEAKXD operations at previous LPs are no longer required. These are the WCA-to-PSA offsets and XD plate-scales. Like PEAKD, the NUM\_POS > 1 PEAKXD requires no patchable constant updates. At previous LPs, numerous updates to the patchable constants were required, this is not necessary for LP4 TA enabling.

Proposal 14907 (STScI Edit Number: 9, Created: Tuesday, June 5, 2018 7:00:51 PM EST) - Overview

Prior to the submission of this program, all LP4 SIAF, aperture mechanism positions, TA subarrays, and grating foci have been appropriately installed (SMS2017.058). Visits 01-05 will test these parameters and a further update will be initiated, if required. The FSW at the beginning of this program is the patch updated LV0058. Between Visits 02 and 03 of this program, LV0059 will be installed. This was installed on May 8, 2017. Visits 03-06 will be executed using LV0059.

Visit 01 tests ACQ/SEARCH and Visit 02 tests ACQ/PEAKD using the G130M grating. Visit 01 uses the C1291 cenwave as this produces the widest in XD (tallest) spectrum of any cenwave for which TA is allowed that fully covers both detector segments. Visit 02 uses the C1327 cenwave as this is the most different of the TA enabled G130M cenwaves. Visit 03-05 test ACQ/PEAKXD in its new NUM\_POS > 1 form for each of the FUV gratings. This extension of the ACQ/PEAKD algorithm in the cross-dispersion direction (XD) has been available in the FSW since LV0054 and was put in place to handle the much larger geometric distortions found in the LP4 detector regions. Visit 03 tests ACQ/PEAKXD with the widest in XD (tallest) G130M cenwave, C1291. Visit 04 tests ACQ/PEAKXD with G160M/1600 and Visit 05 uses G140L/1280.

Finally, Visit 06 tests all of the TA modes together, in combination, on a separate target (WD1657+343). This visit should be the first FUV Spectroscopic TA executed at LP4.

The specific details of the testing of each visit are given in the Observing Description section and in the visit level comments.

Visit 01 of this program (the ACQ/SEARCH test) will provide an initial test of the TA subarrays and SIAF entries. If needed, the subarrays and/or the SIAF entries will be adjusted before the execution of Visit 02. For this reason, Visit 02 is configured to execute 4-5 weeks after Visit 01.

Visit 02 of this program (14907), the ACQ/PEAKD test, will verify and further test any updates that result from the Visit 01 analysis. In particular, this visit will test the TA subarrays during large along-dispersion AD offsets and provide the G130M AD plate scales.

Visits 03-05 (the ACQ/PEAKXD tests) will further test the TA subarrays with large XD offsets and provide XD plate scales and WCA-to-PSA offsets for each FUV grating. (APT25.2.2)

Visits 01 and 02 will occur before APT25.2 will be released (June 2017) and will therefore not test the entire LP4 system end-to-end. APT25.2 exposes the new ACQ/PEAKXD to GOs and contains defaults suitable for LP4 FUV TAs. Visits 03-05 can execute as early as 4-5 weeks after Visit 02. However, we must test APT25.2, its associated TRANS, ground system commanding, and LV0059 using its new NUM\_POS and STEP\_SIZE in

Proposal 14907 (STScI Edit Number: 9, Created: Tuesday, June 5, 2018 7:00:51 PM EST) - Overview this program. We prefer to test this with all 3 FUV gratings and therefore require that Visits 03-05 should execute using the full APT25.2.2 configuration.

Prior to Visit 06, LV0059 and APT25.2 must have been installed and the official switch to LP4 operations must have occurred. We request that Visit 06 be the first FUV Spectroscopic TA executed at LP4 and no other FUV spectroscopic TAs should occur for at least two weeks after the move to LP4 to ensure that LP4 spectroscopic TAs are working properly end-to-end from APT-to-archive.

NUV imaging TAs are used to determine the correct (and initial) desired locations for LP4 FUV spectra.

Note that the ETC runs here were made using ETC 25.1.1 and are therefore valid for Summer 2017. Some TDS drop may have occurred before these visits execute, but we have plenty of counts to do what we need to do in this program.

Each visit intentionally moves the target in the AD or XD, using POS-TARGs, and with targets that are offset in RA and DEC. The RA/DEC target offsets are required for testing the accuracy of the TA, while the POS-TARGs are useful for determining the plate scales and validating the TA subarrays. In order for the targets to be offset correctly in AD and/or XD, the RA and DEC target offsets are tied to a Visit-specific orientation. These orientation requirements produce visits which are only valid for an ~10-day window. Should a visit get delayed, new target RA and DEC offsets and orients must be re-calculated and the program re-submitted. Visit specific offsets and orientations are discussed in the visit level comments.

Note that the PI has been changed to David Sahnow in June 2018, prior to Visit 07 execution.

#### **OBSERVING DESCRIPTION**

The goal is to enable and verify FUV dispersed light centering (target acquisition, TA) of a point source within the PSA at the fourth lifetime position (LP4). This activity defines the FUV TA parameters in the Cycle 25 flight software (FSW) (LV0058/9) and verifies that the FUV centering error is within the required thresholds. viz. 0.1 arcsec.

Visits 01-02 will be created using the APT25.0.3 LIFETIME-POS=LP4 optional keyword. Prior to execution, all the appropriate HV, SIAF, APERTURE, FOCUS, SUBARRAYS, and TA parameter updates must be available (They should all be available by 2017.058). The Subarrays, HV and SIAF are all part of the ground system, while the FOCUS values, APERTURE positions, and the TA parameters are patchable constants in the FSW. Note that for LP4 there are no TA-specific FSW parameters that must be installed before execution of these visits. Visits 03-05 will be

Proposal 14907 (STScI Edit Number: 9, Created: Tuesday, June 5, 2018 7:00:51 PM EST) - Overview executed after the LV0059 and APT25.2 operational installations. Visit 06 will execute after the move to LP4 and will use LIFETIME-POS=default.

Visit 01 tests ACQ/SEARCH and also verifies that the updated FUV LP4 SIAF entries and TA sub-arrays are correct for the LP4. After an NUV imaging TA and the standard NUV to FUV LP4 offset, a 3x3x1.1" ACQ/SEARCH pattern is simulated by moving the target relative to the aperture via POSTARGS. At each position, a quick spectrum is taken at each location (with TAGFLASH=YES). 1.1" was selected instead of the default 1.767" so that we ensure that no target light is missing the TA sub-arrays at locations relative to the PSA where target light still enters the PSA. An actual 3x3x1.1" ACQ/SEARCH is performed on the same centered target. Next, a 3x3x1.767" ACQ/SEARCH is performed on a target offset by 1.414" in the aperture. Using the Roll angle on the data of the expected observation, the target will be offset by 1" in AD (Along Dispersion) and 1" in XD (cross-dispersion) or [AD, XD]=[+1,+1]". This will be followed by a 2x2x1.767" ACQ/SEARCH on a target offset in the opposite direction by [AD, XD]=[-1.1,-1.1]" Note that for PEAKXD at LP4 to operate correctly, light must be obtained from a source up to +/- 2" in the XD direction. We will use the +/- 1.1" in XD spectra to determine if our current subarrays are tall enough in the XD by extrapolating from the +/- 1.1" C1291 XD positions to 2" with an appropriate margin.

Visit 01 will use a roll angle of 150 degrees +/- 1 degree, with schedubility of 90%.

Visit 02 tests ACQ/PEAKD. From a centered position, simulate a normal ACQ/PEAKD pattern (i.e., 5 x 0.8"). Take spectra at all positions (via POS-TARGs) using G130M/1327. Track Ly-alpha to make sure the Geocoronal light remains outside the TA extraction boxes (subarrays) at all offsets. Repeat an actual 5x0.8" ACQ/PEAKD for a centered target, then center on off-centered target in both directions. Then execute a 5x0.8" PEAKD on a target offset by -0.3", a 5x0.9" PEAKD of a target offset by +0.7", a 3x1.2" PEAKD on a target offset by -0.7", and finally a 3x1.3" on a target offset by +0.4".

Visit 02 will use a roll angle of 185 degrees +/- 1 degree with schedubility of 90%.

Visits 03-05 test ACQ/PEAKXDwith APT25.2.2 and define the plate scales for each grating (Visit 03= G130M, Visit 04= G160M, Visit05 = G140L). Each visit has the same structure, with a schedubility of 100%

- 1) Take spectra as the target is stepped (via POS-TARGs) in the XD direction to determine the plate scales. WCA lamp will also be flashed to verify the plate scale at the WCA position and the PSA locations. Spectra will be taken at 5 XD locations +/- (0, 0.8, 1.6)".
- 2) Test ACQ/PEAKXD with NUM\_POS=5 and STEP\_SIZE=0.8 at the centered position to match the POS\_TARG pattern.

Proposal 14907 (STScI Edit Number: 9, Created: Tuesday, June 5, 2018 7:00:51 PM EST) - Overview

- 3) Test ACQ/PEAKXD with NUM\_POS=3 and STEP\_SIZE=1.3" at an offset position of +0.8"
- 4) Test ACQ/PEAKXD with NUM\_POS=3 and STEP\_SIZE=DEF" at an offset position of -0.8"
- 5) Test ACQ/PEAKXD with NUM\_POS=DEF and STEP\_SIZE=DEF" at an offset position of -0.5" AND, if Time available then
- 5) Test ACQ/PEAKXD with NUM\_POS=3 and STEP\_SIZE=1.25" at an offset position of +0.5"

Visits 03-05 will use eAPT25.2.1. Under the current schedule, APT25.2 will be realeased on June 1-5, 2017. The roll-angle of 315 degrees (+/- 1 degree) for visits 03-05 allows observation all of Aug. 2017.

Visit 06 is the confirmation visit, after the LP4 Move. Start with G130M/1309/PEAKXD with N=3, 5, and 7 using STEP\_SIZE=DEF. Next, test each grating (G130M/1309, G160M/1600, and G140L/1280) for targets offset by +/- 0.8" using nominal N>1 PEAKXDs. Next, perform two full TA sequences with different cenwaves, one with G160M/1577, one with G130M/1291. The G160M ACQ/SEARCH+PEAKXD+PEAKD on a target offset -0.8" in AD, and +0.8" off in XD. G160M/1577 will use a 3x3x1.767" ACQ/SEARCH + DEF PEAKXD+ 7x0.45" PEAKD on an offset target. G130M will use a default 3x1.3" PEAKXD and a 3x1.25" PEAKD. As this visit executes after the LP4 move, it will use the exact LP4 conditions as GO should encounter once LP4 FUV TA spectroscopic TAs are enababled (at least 2 week after this visit)

Visit 06 will use a roll angle of 70 +/- 1 degree, this roll angle is good from Oct 2-9, 2017. Visit 06 uses schedubility = "None Selected"

Visit 07 is an FUVA-only PEAKXD test. The COS team is currently seeking HSTMO approval to execute this visit (in July/Aug 2018). Note that the PI has been changed to David Sahnow.

There is no special commanding in this program.

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Proposal 14907, ACO/SEARCH TEST (01), completed
                                                                                                                                                                           Wed Jun 06 00:00:51 GMT 2018
    Diagnostic Status: Warning
    Scientific Instruments: COS/FUV, COS/NUV
    Special Requirements: SCHED 90%; ORIENT 149D TO 151 D; BETWEEN 27-FEB-2017:00:00:00 AND 08-MAR-2017:00:00:00
    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 roll angle is constrained to 150 degrees +/- 1 degree, schedulability = 100%. First we use pos-targs to simulate the 3x3x1.1" pattern, taking TAGFLASHed spectra at each location. We then perform a 3x3x1.1"
    ACO/SEARCH on the centered target. We then offset the target 1" in XD and 1" in AD and perform a 3x3x1.767" ACO/SEARCH and then a 2x2x1.767" ACO/SEARCH on the target.
    Available Roll Angles (we are going with 150 +/- 1)
    27 Feb 2017 141.14 - 151.14
    28 Feb 2017 142.20 - 152.20
    01 Mar 2017 143.25 - 153.25
    02 Mar 2017 144.30 - 154.30
    03 Mar 2017 145.35 - 155.35
    04 Mar 2017 146.40 - 156.40
    05 Mar 2017 147.43 - 157.43
    06 Mar 2017 148.47 - 158.47
    07 Mar 2017 149.50 - 159.50
    08 Mar 2017 150.53 - 160.53
    09 Mar 2017 151.55 - 161.55
    10 Mar 2017 152.57 - 162.57
    11 Mar 2017 153.58 - 163.58
    12 Mar 2017 154.59 - 164.59
    (ACQ/SEARCH TEST (01)) Warning (Form): For the best data quality, it is strongly recommended that the maximum number of allowed FP-POS positions is used when observing at a given COS CENWAVE setting
Diagnostics
    See full description for details.
    (ACO/SEARCH TEST (01)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN
    (ACO/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
     ACO/SEARCH TEST (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE
```

#	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							
Catego Descrip	ents: B2Ia, Magellanic Clouds bry=STAR ption=[B0-B2 III-I] ded=NO	. B2Ia, Magellanic Clouds. Nominal ETC ex	posure times derived from previous COS + IUE spec	trum.						
(11)	AZV18-	Offset from AZV18		V=12.48	Offset Position (AZV18-					
	OFFSET+1AD+1XD- OR+1.4OFF	RA Offset: 0.0011709042 Degrees		(B-V)=+0.04	OFFSET+1AD+1XD-OR+1.4OFF)					
	OK 11.4011	Dec Offset: 0.7071068 Arcsec								
Comme	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 $[+1,+1]$									
Comme The U3	3 roll angle has been constrain	ed to 150 +/- 1 degree, this angle works for l	March 5, 2017 +/- 5 days							
	+sqrt(2)"* $cos(15)$ =+1.366025 =+ $sqrt(2)$ "* $sin(15)$ =+0.36602									
To mov	ve the target to this location, th	e offset should have the opposite sign in the o	offsets above.							
	pry=STAR ntion=IPO P2 III II									
Descrip	ption=[B0-B2 III-I] ed=NO									

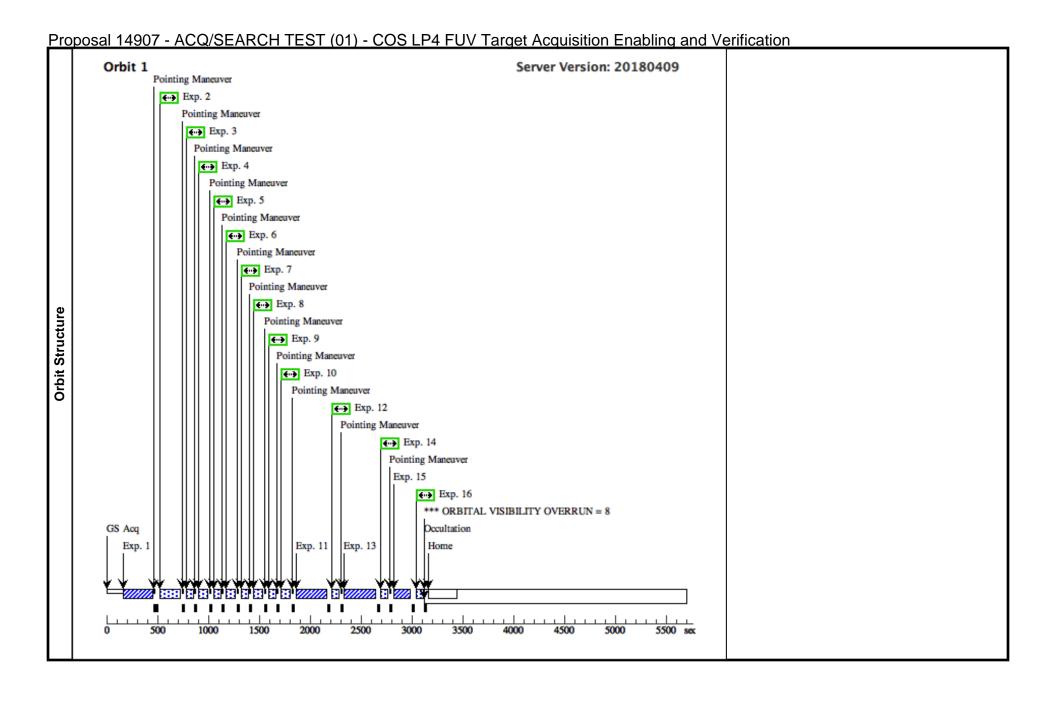
	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	2 nuv a/im (COS.ta.904	(1) AZV18	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				32 Secs (32 Secs)	
	984)							[==>]	[1]
This	ETC25.1.1 giv		OA+MIRRORA to refine centering. CO. seconds, we go for 32s just be to sure. cound subtraction)						
2	G130M - B ASELINE S	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M	BUFFER-TIME=50		Sequence 2-10 Non-I nt in ACQ/SEARCH		
	PECTRUM			1291 A	0; FP-POS=3;		TEST (01)	[==>]	
	(COS.sp.904 989)				FLASH=S0080D03				[1]
					0; LIFETIME-POS=L				[1]
					P4				
e sho ed in	ould expect a S SCR370 for in	N of 3/RE with a B aclusion in a future	ne correct location of star when it is cer T < 1000*(2/3) = 666, we use 500 to be FSW release. Tagflash sequence is 30s TC 25.1.1 and should be valid anytime i	e safe. This spectru on.	ETC uses a previous CO m will be used to define t	S spectrum from 13636 he WCA-to-PSA offset	6 . This ETC run (COS.s for the G130M, which,	sp.904989) is for 22 seconds and indic although not required for LP4, will be	cates that w e document
3	G130M - P		COS/FUV, TIME-TAG, PSA	G130M	BUFFER-TIME=50	POS TARG 1.1,null	Sequence 2-10 Non-I	22 Secs (22 Secs)	
	OSTARG + SPECTRU			1291 A	0;		nt in ACQ/SEARCH TEST (01)	[==>]	
	M1 (1.1,0)				FP-POS=3;		1251 (01)		[1]
	(COS.sp.904 989)				FLASH=YES; LIFETIME-POS=L				[1]
Com 30k,	ments: POSTA	RG TO SIMULATE	EACQ/SEARCH. $S/N = 60$ is reached in	ı 2 seconds. Observ	P4 e for 22 seconds. (~45k to	otal counts(A+B), cent			should be ~
4	G130M - P OSTARG +	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M	BUFFER-TIME=50 0;	POS TARG 1.1,1.1	Sequence 2-10 Non-I nt in ACQ/SEARCH		
	SPECTRU			1291 A	FP-POS=3;		TEST (01)	[==>]	
	M2 (1.1,1.1) (Corner)				FLASH=YES;				[1]
	(COS.sp.904 989)				LIFETIME-POS=L				
Com	<i>'</i>	RG TO SIMULATE	E ACQ/SEARCH. S/N = 60 is reached in	a 2 seconds. Observ	P4 e for 44 seconds. (~1000	00 total counts(A+B), a	centered). 1.55" it is 28	.6 %. Total counts should be ~ 30k,	
5	G130M - P		COS/FUV, TIME-TAG, PSA	G130M	BUFFER-TIME=50		Sequence 2-10 Non-I	22 Secs (22 Secs)	
	OSTARG + SPECTRU			1291 A	0; ED DOS - 2:		nt in ACQ/SEARCH TEST (01)	[==>]	
	M3 (0,1.1) (COS.sp.904				FP-POS=3; FLASH=YES:				[1]
	989)				LIFETIME-POS=L P4				[1]
Com	ments: POSTA	RG TO SIMULATE	E ACQ/SEARCH this is a side, so see ex	poruse 01.003 for c					
6	G130M - P	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M	BUFFER-TIME=50	POS TARG -1.1,1.1	Sequence 2-10 Non-I	44 Secs (44 Secs)	
	OSTARG + SPECTRU			1291 A	0;		nt in ACQ/SEARCH TEST (01)	[==>]	
	M4 (-1.1,1.1) (Corner)				FP-POS=3; FLASH=YES;				[1]
	(COS.sp.904				LIFETIME-POS=L				[1]
	989)				P4				
Com	ments: POSTA	RG TO SIMULATE	EACQ/SEARCH this is a corner, so see	exporuse 01.004 fo	r comments				

Proposal 14907 - ACQ/SEARCH TEST (01) - COS LP4 FUV Target Acquisition Enabling and Verification G130M - P (1) AZV18 Sequence 2-10 Non-I COS/FUV, TIME-TAG, PSA G130M BUFFER-TIME=50 POS TARG -1.1.0 22 Secs (22 Secs) OSTARG+ nt in ACO/SEARCH 1291 A I==>1SPECTRU TEST (01) FP-POS=3: M5 (-1.1.0) (COS.sp.904 FLASH=YES: [1] 989) LIFETIME-POS=L Comments: POSTARG TO SIMULATE ACO/SEARCH this is a side, so see exporuse 01.003 for comments G130M - P (1) AZV18 COS/FUV, TIME-TAG, PSA G130M BUFFER-TIME=50 POS TARG -1.1,-1.1 Sequence 2-10 Non-I | 44 Secs (44 Secs) OSTARG + nt in ACO/SEARCH I==>11291 A TEST (01) SPECTRU FP-POS=3; M6 (-1.1,-1. 1) (Corner) FLASH=YES; [1] (COS.sp.904 LIFETIME-POS=L 989) Comments: POSTARG TO SIMULATE ACQ/SEARCH this is a corner, so see exporuse 01.004 for comments G130M - P (1) AZV18 COS/FUV, TIME-TAG, PSA G130M BUFFER-TIME=50 POS TARG 0,-1.1 Sequence 2-10 Non-I 22 Secs (22 Secs) OSTARG + nt in ACQ/SEARCH *[==>]* 1291 A **SPECTRU** TEST (01) FP-POS=3; M7(0,-1.1)(COS.sp.904 FLASH=YES; [1] 989) LIFETIME-POS=L P4 Comments: POSTARG TO SIMULATE ACQ/SEARCH this is a side, so see exporuse 01.003 for comments G130M - P (1) AZV18 COS/FUV, TIME-TAG, PSA G130M BUFFER-TIME=50 POS TARG 1.1,-1.1 Sequence 2-10 Non-I | 44 Secs (44 Secs) OSTARG + nt in ACQ/SEARCH 1291 A SPECTRU TEST (01) FP-POS=3; M8 (+1.1,-1.FLASH=YES; [1] 1) (Corner) (COS.sp.904 LIFETIME-POS=L 989) Comments: POSTARG TO SIMULATE ACQ/SEARCH this is a corner, so see exporuse 01.004 for comments COS/FUV, ACQ/SEARCH, PSA G130M - A (1) AZV18 G130M SCAN-SIZE=3; Sequence 11-12 Non 2 Secs (2 Secs) CQ/SEARC -Int in ACQ/SEARC 1291 A STEP-SIZE=1.1; I = = > 1Η H TEST (01) [1] (COS.sa.904 LIFETIME-POS=L 990) P4 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 12 G130M - B (1) AZV18 COS/FUV. TIME-TAG. PSA G130M BUFFER-TIME=50 Sequence 11-12 Non 24 Secs (24 Secs) ASELINE S -Int in ACO/SEARC 0; 1291 A I = = > 1PECTRUM H TEST (01) FP-POS=3; (COS.sp.904 989) FLASH=YES; [1] LIFETIME-POS=L 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 w. th a BT < 1000\*(2/3) = 666, we use 500 to be safe. FLASH=YES G130M - A (11) AZV18-OFFSE COS/FUV, ACQ/SEARCH, PSA G130M SCAN-SIZE=3; Sequence 13-14 Non | 2 Secs (2 Secs) CO/SEARC T+1AD+1XD-OR+1 -Int in ACO/SEARC 1291 A STEP-SIZE=1.767; f = = > 1Η .4OFF H TEST (01) [1] (COS.sa.904 LIFETIME-POS=L 990) P4 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 s 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.

Proposal 14907 - ACQ/SEARCH TEST (01) - COS LP4 FUV Target Acquisition Enabling and Verification G130M - B (11) AZV18-OFFSE COS/FUV, TIME-TAG, PSA G130M BUFFER-TIME=50 Sequence 13-14 Non 24 Secs (24 Secs) -Int in ACQ/SEARC H TEST (01) ASELINE S T+1AD+1XD-OR+1 0: 1291 A I = = > 1PECTRUM .4OFF FP-POS=3; (COS.sp.904 989) FLASH=YES: [1] LIFETIME-POS=L 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 wi th a BT < 1000\*(2/3) = 666, we use 500 to be safe. FLASH=YES G130M - A (1) AZV18 COS/FUV, ACQ/SEARCH, PSA G130M SCAN-SIZE=2; Sequence 15-16 Non 2 Secs (2 Secs) -Int in ACQ/SEARC CQ/SEARC 1291 A STEP-SIZE=1.767; [==>] Η H TEST (01) [1] (COS.sa.904 LIFETIME-POS=L 990) 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 s 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 COS/FUV, TIME-TAG, PSA 16 G130M - B (1) AZV18 G130M BUFFER-TIME=50 Sequence 15-16 Non 24 Secs (24 Secs) -Int in ACQ/SEARC ASELINE S 0; 1291 A f = = > 1PECTRUM H TEST (01) FP-POS=3; (COS.sp.904 989) FLASH=YES; [1] LIFETIME-POS=L

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 wi

th a BT < 1000\*(2/3) = 666, we use 500 to be safe. FLASH=YES



Proposal 14907, ACQ/PEAKD TEST (02), completed Wed Jun 06 00:00:52 GMT 2018

**Diagnostic Status: Warning** 

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 90%; ORIENT 184D TO 186 D; BETWEEN 03-APR-2017 AND 13-APR-2017

Comments: NOTE THAT ORIENT AND RA & DEC Offsets are tied to the exectution date range of APR 3-13, 2017. Note the execution of this visit is tied to the successful analysis of the Vist 01 results. All FUV exposures in this visit are C1327

ACQ/PEAKD test on AVZ18. In previous versions we needed to measure the WCA-to-PSA offsets for all the FUV gratings. This is not required for LP4 since PEAKXD will not work due to the extreme Y distortion of the FUVA segment. In its place, we will be using the PEAKD algorithm adopted to the XD direction. This functionality became available in LV0057 and we begin using it for regular GO observations at LP4. We will measure the WCA-to-PSA offsets from the LP4 focus program and load them into the FSW in a future release (LV0060?).

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" ACO/PEAKD on the centered target, then attempt a 3x1.2" ACO/PEAKD on a target offset by +0.3", then a 3x1.3" offset by -0.7".

The roll angle is constrained to 185 +/- 1 degrees, and is valid for Apr 3-13, 2017.

Note orient and target RA and DEC OFFSETs have not yet been defined

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
 24s

 0.80
 20.00
 1.25
 30s

 1.60
 73.33
 3.75
 90s

The roll angle's available are 02 Apr 2017 174.89 - 184.89

03 Apr 2017 175.81 - 185.81 04 Apr 2017 176.64 - 186.74 05 Apr 2017 177.66 - 187.66 06 Apr 2017 178.57 - 188.57 07 Apr 2017 179.49 - 189.49 08 Apr 2017 180.40 - 190.40 09 Apr 2017 181.31 - 191.31 10 Apr 2017 182.22 - 192.22 11 Apr 2017 183.12 - 193.12 12 Apr 2017 184.03 - 194.03 13 Apr 2017 184.93 - 194.93

(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 (Form): For the best data quality, it is strongly recommended that the maximum number of allowed FP-POS positions is used when observing at a given COS CENWAVE setting. See full description for details.

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

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

**Diagnostics** 

(G130M/1327- BASELINE SPECTRUM (02.002)) Warning (Form): Defaults for SEGMENT have changed in APT25.2 for use of LP4 with G130M. See full description for details.

(G130M - POSTARG + SPECTRUM1 (-1.6) (02.003)) Warning (Form): Defaults for SEGMENT have changed in APT25.2 for use of LP4 with G130M. See full description for details.

(G130M - POSTARG + SPECTRUM3 (-0.8) (02.004)) Warning (Form): Defaults for SEGMENT have changed in APT25.2 for use of LP4 with G130M. See full description for details.

(G130M - POSTARG + SPECTRUM7 (0.8) (02.005)) Warning (Form): Defaults for SEGMENT have changed in APT25.2 for use of LP4 with G130M. See full description for details.

(G130M - POSTARG + SPECTRUM8 (1.6) (02.006)) Warning (Form): Defaults for SEGMENT have changed in APT25.2 for use of LP4 with G130M. See full description for details.

(G130M - ACQ/PEAKD (02.007)) Warning (Form): Defaults for SEGMENT have changed in APT25.2 for use of LP4 with G130M. See full description for details.

(G130M - BASELINE SPECTRUM (02.008)) Warning (Form): Defaults for SEGMENT have changed in APT25.2 for use of LP4 with G130M. See full description for details.

(G130M - ACQ/PEAKD (02.009)) Warning (Form): Defaults for SEGMENT have changed in APT25.2 for use of LP4 with G130M. See full description for details.

(G130M - BASELINE SPECTRUM (02.010)) Warning (Form): Defaults for SEGMENT have changed in APT25.2 for use of LP4 with G130M. See full description for details.

(G130M - ACQ/PEAKD (02.011)) Warning (Form): Defaults for SEGMENT have changed in APT25.2 for use of LP4 with G130M. See full description for details.

(G130M - BASELINE SPECTRUM (02.012)) Warning (Form): Defaults for SEGMENT have changed in APT25.2 for use of LP4 with G130M. See full description for details.

(G130M - ACQ/PEAKD (02.013)) Warning (Form): Defaults for SEGMENT have changed in APT25.2 for use of LP4 with G130M. See full description for details.

(G130M - BASELINE SPECTRUM (02.014)) Warning (Form): Defaults for SEGMENT have changed in APT25.2 for use of LP4 with G130M. See full description for details.

(G130M - ACQ/PEAKD (02.015)) Warning (Form): Defaults for SEGMENT have changed in APT25.2 for use of LP4 with G130M. See full description for details.

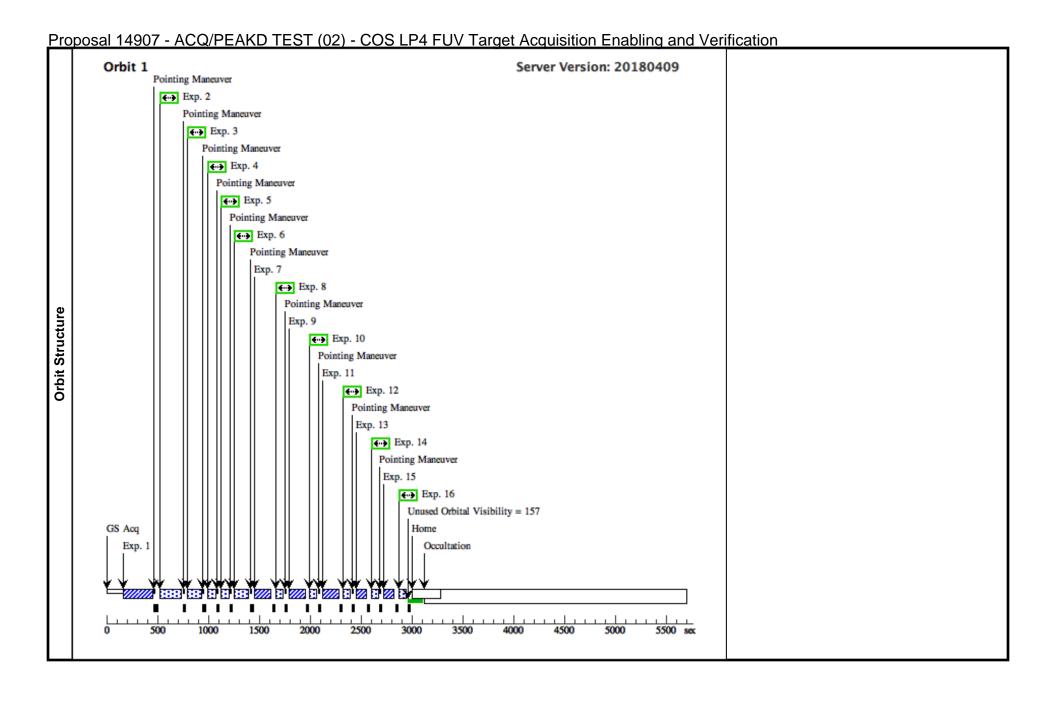
(G130M - BASELINE SPECTRUM (02.016)) Warning (Form): Defaults for SEGMENT have changed in APT25.2 for use of LP4 with G130M. See full description for details.

	#	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		
	Category=	=STAR on=[B0-B2 III-I]	B2Ia, Magellanic Clouds. Nominal ETC exposure	times derived from previous COS + IUE spectr	um.	
rgets	(21)	AZV18-OFFSET-AD-0.3	Offset from AZV18		V=12.48	Offset Position (AZV18-OFFSET-AD-0.3)
l g			RA Offset: -1.8435906E-4 Degrees		(B-V)=+0.04	
Τa			Dec Offset: 0.22981334 Arcsec			
Fixed	Category=	=STAR on=[B0-B2 III-I]	a +AD direction. The U3 roll angle has been const	rained to be 175 +/- 1 degree		
	(22)	AZV18-OFFSET-	Offset from AZV18		V=12.48	Offset Position (AZV18-OFFSET-AD+0.4)
		AD+0.4	RA Offset: 1.2028E-4 Degrees		(B-V)=+0.04	
			Dec Offset: -0.25 Arcsec			
	Category=	=STAR on=[B0-B2 III-I]	n the -AD direction. The U3 roll angle has been co	onstrained to be 175 +/- 1 degree		

"	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.904	(1) AZV18	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				32 Secs (32 Secs)	
	984)							[==>]	[1]
T	his ETC25.1.1 gi	ves S/N=60 in 27	BOA+MIRRORA to refine centering. CO 7.4 seconds, we go for 31s just be to sure. ground subtraction)	OS.ta.904984 uses a p The previous ACQ/	previous COS spectrum p IMAGEs in 13636 gave a	olus an IUE spectrum. 1			
2	G130M/132	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M	BUFFER-TIME=50		Sequence 2-6 Non-In	24 Secs (24 Secs)	
	7- BASELI NE SPECT			1327 A	0; FP-POS=3;		t in ACQ/PEAKD T EST (02)	[==>]	
	RUM (COS.sp.904				FLASH=S0040D02				
	993)				5;				[1]
					WAVECAL=YES;				
					LIFETIME-POS=L P4				
C	Comments: Spectr	um of source to de	efine correct location of star when it is ce	ntered in PSA (COS	.sp.904993). BT=100*(2)	$/3) = \sim 666$ , we us 500.	This will get us S/N~3	per RE with 25s lamp flash	
3	G130M - P OSTARG +	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M	BUFFER-TIME=60 0;	POS TARG -1.6,null	Sequence 2-6 Non-Int in ACQ/PEAKD T	` ´	
	SPECTRU			1327 A	FP-POS=3:		EST (02)	[==>]	
	M1 (-1.6) (COS.sp.904				FLASH=YES;				[1]
	993)				LIFETIME-POS=L				
	Commontes DOST	ADC TO SIMILIA	TE $5x0.8$ "" ACQ/PEAKD. This is the $x=$	16" magitian C/N	P4	anda (man agament). The		20/ To achieve the same S/N as the same	
10	xposure, we need		1E 3x0.6 ACQ/FEARD. This is the $x$ -	-1.0 position. 3/1v -	– 00 is reached in 2 seco	nas (per segment). The	vigneiting at 1.0 (8/3	70, 10 achieve the same 5/11 as the pr	evious 25.
е.	xposure, we need	948							
4	G130M - P		COS/FUV, TIME-TAG, PSA	G130M		POS TARG -0.8,null	Sequence 2-6 Non-In		
4	G130M - P OSTARG + SPECTRU		COS/FUV, TIME-TAG, PSA	G130M 1327 A	0;	POS TARG -0.8,null	Sequence 2-6 Non-In t in ACQ/PEAKD T EST (02)	30 Secs (30 Secs) [==>]	
4	G130M - P OSTARG +	(1) AZV18	COS/FUV, TIME-TAG, PSA			POS TARG -0.8,null	t in ACQ/PEAKD T		[1]
4	G130M - P OSTARG + SPECTRU M3 (-0.8)	(1) AZV18	COS/FUV, TIME-TAG, PSA		0; FP-POS=3; FLASH=YES; LIFETIME-POS=L	POS TARG -0.8,null	t in ACQ/PEAKD T		[1]
	G130M - P OSTARG + SPECTRU M3 (-0.8) (COS.sp.904 993)	(1) AZV18		1327 A	0; FP-POS=3; FLASH=YES; LIFETIME-POS=L P4		t in ACQ/PEAKD T EST (02)	[==>]	
С	G130M - P OSTARG + SPECTRU M3 (-0.8) (COS.sp.904 993)	(1) AZV18  ARG TO SIMULA	COS/FUV, TIME-TAG, PSA  TE $5x0.8''''$ ACQ/PEAKD. This is the $x=$	1327 A	0; FP-POS=3; FLASH=YES; LIFETIME-POS=L P4		t in ACQ/PEAKD T EST (02)	[==>]	
С	G130M - P OSTARG + SPECTRU M3 (-0.8) (COS.sp.904 993) Comments: POSTA xposure, we need G130M - P	(1) AZV18  ARG TO SIMULA 32s		1327 A -0.8 " position. S/N =	0; FP-POS=3; FLASH=YES; LIFETIME-POS=L P4 = 60 is reached in 2 seco		t in ACQ/PEAKD T EST (02)  vignetting at 0.8" is 20  Sequence 2-6 Non-In	[==>]  0%, To achieve the same S/N as the pr  30 Secs (30 Secs)	
4 C	G130M - P OSTARG + SPECTRU M3 (-0.8) (COS.sp.904 993) Comments: POSTA xposure, we need G130M - P OSTARG + SPECTRU	(1) AZV18  ARG TO SIMULA 32s	TE $5x0.8$ "" ACQ/PEAKD. This is the $x=$	1327 A -0.8 " position. S/N :	0; FP-POS=3; FLASH=YES; LIFETIME-POS=L P4 = 60 is reached in 2 seco BUFFER-TIME=60 0;	nds (per segment). The	t in ACQ/PEAKD T EST (02)	[==>]  9%, To achieve the same S/N as the pr	
С	G130M - P OSTARG + SPECTRU M3 (-0.8) (COS.sp.904 993) Comments: POSTA xposure, we need G130M - P OSTARG + SPECTRU M7 (0.8) (COS.sp.904	(1) AZV18  ARG TO SIMULA 32s (1) AZV18	TE $5x0.8$ "" ACQ/PEAKD. This is the $x=$	1327 A -0.8 " position. S/N =	0; FP-POS=3; FLASH=YES; LIFETIME-POS=L P4 = 60 is reached in 2 seco	nds (per segment). The	t in ACQ/PEAKD T EST (02) vignetting at 0.8" is 20 Sequence 2-6 Non-In t in ACQ/PEAKD T	[==>]  0%, To achieve the same S/N as the pr  30 Secs (30 Secs)	
С	G130M - P OSTARG + SPECTRU M3 (-0.8) (COS.sp.904 993) Comments: POSTA xposure, we need G130M - P OSTARG + SPECTRU M7 (0.8)	(1) AZV18  ARG TO SIMULA 32s (1) AZV18	TE $5x0.8$ "" ACQ/PEAKD. This is the $x=$	1327 A -0.8 " position. S/N =	0; FP-POS=3; FLASH=YES; LIFETIME-POS=L P4 = 60 is reached in 2 seco BUFFER-TIME=60 0; FP-POS=3; FLASH=YES; LIFETIME-POS=L	nds (per segment). The	t in ACQ/PEAKD T EST (02) vignetting at 0.8" is 20 Sequence 2-6 Non-In t in ACQ/PEAKD T	[==>]  0%, To achieve the same S/N as the pr  30 Secs (30 Secs)	evious 25s
5 5	G130M - P OSTARG + SPECTRU M3 (-0.8) (COS.sp.904 993) Comments: POSTA xposure, we need G130M - P OSTARG + SPECTRU M7 (0.8) (COS.sp.904 993)	(1) AZV18  ARG TO SIMULA 32s (1) AZV18  ARG TO SIMULA	TE $5x0.8$ "" ACQ/PEAKD. This is the $x=$	1327 A -0.8 " position. S/N = G130M 1327 A	0; FP-POS=3; FLASH=YES; LIFETIME-POS=L P4 = 60 is reached in 2 seco BUFFER-TIME=60 0; FP-POS=3; FLASH=YES; LIFETIME-POS=L P4	nds (per segment). The	t in ACQ/PEAKD T EST (02)  vignetting at 0.8" is 20  Sequence 2-6 Non-In t in ACQ/PEAKD T EST (02)	[==>]  0%, To achieve the same S/N as the pr $[==>]$ $[==>]$	evious 25s
5 5	G130M - P OSTARG + SPECTRU M3 (-0.8) (COS.sp.904 993)  Comments: POSTA xposure, we need G130M - P OSTARG + SPECTRU M7 (0.8) (COS.sp.904 993)  Comments: POSTA xposure, we need G130M - P	(1) AZV18  ARG TO SIMULA 32s  (1) AZV18  ARG TO SIMULA 32s	TE 5x0.8"" ACQ/PEAKD. This is the x=  COS/FUV, TIME-TAG, PSA	1327 A -0.8 " position. S/N = G130M 1327 A	0; FP-POS=3; FLASH=YES; LIFETIME-POS=L P4 = 60 is reached in 2 seco BUFFER-TIME=60 0; FP-POS=3; FLASH=YES; LIFETIME-POS=L P4 = 60 is reached in 2 seco	nds (per segment). The	t in ACQ/PEAKD T EST (02)  vignetting at 0.8" is 20  Sequence 2-6 Non-In t in ACQ/PEAKD T EST (02)  e vignetting at 0.8" is 2  Sequence 2-6 Non-In	[==>]  20%, To achieve the same S/N as the pr  30 Secs (30 Secs)  [==>]  20%, To achieve the same S/N as the p	revious 25s
5 5	G130M - P OSTARG + SPECTRU M3 (-0.8) (COS.sp.904 993)  Comments: POST. xposure, we need G130M - P OSTARG + SPECTRU M7 (0.8) (COS.sp.904 993)  Comments: POST. xposure, we need G130M - P OSTARG + SPECTRU GOSTARG + SPECTRU	(1) AZV18  ARG TO SIMULA 32s  (1) AZV18  ARG TO SIMULA 32s	TE $5x0.8''''$ ACQ/PEAKD. This is the $x=$ COS/FUV, TIME-TAG, PSA  TE $5x0.8''''$ ACQ/PEAKD. This is the $x=$	1327 A -0.8 " position. S/N = G130M 1327 A +0.8 " position. S/N	0; FP-POS=3; FLASH=YES; LIFETIME-POS=L P4 = 60 is reached in 2 seco  BUFFER-TIME=60 0; FP-POS=3; FLASH=YES; LIFETIME-POS=L P4 = 60 is reached in 2 seco	nds (per segment). The POS TARG 0.8,null onds (per segment). Th	t in ACQ/PEAKD T EST (02)  vignetting at 0.8" is 20  Sequence 2-6 Non-Int in ACQ/PEAKD T EST (02)  e vignetting at 0.8" is 2	[==>]  20%, To achieve the same S/N as the pr  30 Secs (30 Secs)  [==>]  20%, To achieve the same S/N as the p	revious 25s
5 5	G130M - P OSTARG + SPECTRU M3 (-0.8) (COS.sp.904 993)  Comments: POSTA xposure, we need G130M - P OSTARG + SPECTRU M7 (0.8) (COS.sp.904 993)  Comments: POSTA xposure, we need G130M - P OSTARG + SPECTRU M7 (0.8) (COS.sp.904 993)	(1) AZV18  ARG TO SIMULA 32s (1) AZV18  ARG TO SIMULA 32s (1) AZV18	TE $5x0.8''''$ ACQ/PEAKD. This is the $x=$ COS/FUV, TIME-TAG, PSA  TE $5x0.8''''$ ACQ/PEAKD. This is the $x=$	1327 A  -0.8 " position. S/N =  G130M  1327 A  +0.8 " position. S/N  G130M	0; FP-POS=3; FLASH=YES; LIFETIME-POS=L P4 = 60 is reached in 2 seco  BUFFER-TIME=60 0; FP-POS=3; FLASH=YES; LIFETIME-POS=L P4 = 60 is reached in 2 seco  BUFFER-TIME=60 0; FP-POS=3;	nds (per segment). The POS TARG 0.8,null onds (per segment). Th	t in ACQ/PEAKD T EST (02)  vignetting at 0.8" is 20  Sequence 2-6 Non-Int in ACQ/PEAKD T EST (02)  e vignetting at 0.8" is 2  Sequence 2-6 Non-Int in ACQ/PEAKD T	[==>]  20%, To achieve the same S/N as the pr  30 Secs (30 Secs)  [==>]  20%, To achieve the same S/N as the p	[1] revious 25s
5 5	G130M - P OSTARG + SPECTRU M3 (-0.8) (COS.sp.904 993)  Comments: POST. xposure, we need G130M - P OSTARG + SPECTRU M7 (0.8) (COS.sp.904 993)  Comments: POST. xposure, we need G130M - P OSTARG + SPECTRU GOSTARG + SPECTRU	(1) AZV18  ARG TO SIMULA 32s (1) AZV18  ARG TO SIMULA 32s (1) AZV18	TE $5x0.8''''$ ACQ/PEAKD. This is the $x=$ COS/FUV, TIME-TAG, PSA  TE $5x0.8''''$ ACQ/PEAKD. This is the $x=$	1327 A  -0.8 " position. S/N =  G130M  1327 A  +0.8 " position. S/N  G130M	0; FP-POS=3; FLASH=YES; LIFETIME-POS=L P4 = 60 is reached in 2 seco  BUFFER-TIME=60 0; FP-POS=3; FLASH=YES; LIFETIME-POS=L P4 = 60 is reached in 2 seco	nds (per segment). The POS TARG 0.8,null onds (per segment). Th	t in ACQ/PEAKD T EST (02)  vignetting at 0.8" is 20  Sequence 2-6 Non-Int in ACQ/PEAKD T EST (02)  e vignetting at 0.8" is 2  Sequence 2-6 Non-Int in ACQ/PEAKD T	[==>]  20%, To achieve the same S/N as the pr  30 Secs (30 Secs)  [==>]  20%, To achieve the same S/N as the p	evious 25s

Proposal 14907 - ACQ/PEAKD TEST (02) - COS LP4 FUV Target Acquisition Enabling and Verification G130M - A (1) AZV18 COS/FUV, ACO/PEAKD, PSA G130M NUM-POS=5; Sequence 7-8 Non-In 2 Secs (2 Secs) CO/PEAKD t in ACO/PEAKD T 1327 A STEP-SIZE=0.8; [==>1 (COS.sa.904 EST (02) [1] 995) LIFETIME-POS=L Comments: ACQ/PEAKD of a centered target on the same 5x0.8"" pattern. S/N = 60 is reached in 2 seconds on each segement COS/FUV. TIME-TAG. PSA BUFFER-TIME=50 Sequence 7-8 Non-In 20 Secs (20 Secs) G130M - B (1) AZV18 G130M ASELINE S t in ACO/PEAKD T 0; 1327 A I = = > 1EST (02) PECTRUM FP-POS=3; (COS.sp.904 993) FLASH=YES; [1] LIFETIME-POS=L Comments: Confirmation Spectrum after the PEAKD (COS.sp.904993). BT=100\*(2/3) = ~666, we us 500. This will get us S/N~3 per RE with standard lamp flash G130M - A (21) AZV18-OFFSE COS/FUV, ACO/PEAKD, PSA G130M NUM-POS=5; Sequence 9-10 Non-I 1.5 Secs (1.5 Secs) CO/PEAKD T-AD-0.3 nt in ACO/PEAKD 1327 A STEP-SIZE=0.8; I ==> 1TEST (02) (COS.sa.904 [1] 995) LIFETIME-POS=L P4 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. G130M - B (21) AZV18-OFFSE COS/FUV, TIME-TAG, PSA G130M BUFFER-TIME=50 Sequence 9-10 Non-I 20 Secs (20 Secs) ASELINE S T-AD-0.3 nt in ACQ/PEAKD 0; 1327 A I = = > 1PECTRUM TEST (02) FP-POS=3; (COS.sp.904 993) FLASH=YES; [1] LIFETIME-POS=L Comments: Confirmation spectrum after the ACO/PEAKD. Confirmation Spectrum after the PEAKD (COS.sp.904993). BT=100\*(2/3) = ~666, we us 500. This will get us S/N~3 per RE with standard lamp flash G130M - A (22) AZV18-OFFSE COS/FUV, ACO/PEAKD, PSA G130M NUM-POS=5; Sequence 11-12 Non | 1.5 Secs (1.5 Secs) -Int in ACQ/PEAKD CQ/PEAKD T-AD+0.4 1327 A STEP-SIZE=0.9; I ==> 1(COS.sa.904 TEST (02) [1] 995) LIFETIME-POS=L 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 - B (22) AZV18-OFFSE COS/FUV, TIME-TAG, PSA G130M BUFFER-TIME=50 Sequence 11-12 Non 20 Secs (20 Secs) ASELINE S T-AD+0.4 -Int in ACO/PEAKD 0; 1327 A I = = > 1PECTRUM TEST (02) FP-POS=3; (COS.sp.904 993) [1] FLASH=YES; LIFETIME-POS=L Comments: Confirmation spectrum after the ACO/PEAKD. Confirmation Spectrum after the PEAKD (COS.sp.904993). BT=100\*(2/3) = ~666, we us 500. This will get us S/N~3 per RE with standard lamp flash G130M - A (21) AZV18-OFFSE COS/FUV, ACO/PEAKD, PSA G130M Sequence 13-14 Non 1.5 Secs (1.5 Secs) NUM-POS=3; CQ/PEAKD T-ÁD-0.3 -Int in ACQ/PEAKD 1327 A STEP-SIZE=1.2; I = = > 1(COS.sa.904 TEST (02) [1] 995) LIFETIME-POS=L 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") BUFFER-TIME=50 G130M - B (21) AZV18-OFFSE COS/FUV, TIME-TAG, PSA G130M Sequence 13-14 Non 20 Secs (20 Secs) ASELINE S T-AD-0.3 -Int in ACO/PEAKD 1327 A f==>1 PECTRUM TEST (02) FP-POS=3; (COS.sp.904 993) FLASH=YES; [1] LIFETIME-POS=L Comments: Confirmation spectrum after the ACQ/PEAKD. Confirmation Spectrum after the PEAKD (COS.sp.904993). BT=100\*(2/3) = ~666, we us 500. This will get us S/N~3 per RE with standard lamp flash

15	G130M - A (1) AZV18	COS/FUV, ACO/PEAKD, PSA	G130M	NUM-POS=3:	Sequence 15-16 Non 1.5 Secs (1.5 Secs)	
	CQ/PEAKD (COS.sa.904 995)	COSTOV, ACQUILARD, 19A	1327 A	STEP-SIZE=1.3; LIFETIME-POS=L P4	-Int in ACQ/PEAKD TEST (02)    Int in ACQ/PEAKD   I	[1]
Con	mments: 7x0.55" ACQ/PEAKD o	n an off centered target. We just centered	on the -0.3" tai	get, now we are back to the center, so t	he target is at +0.3"	
16	G130M - B (1) AZV18 ASELINE S	COS/FUV, TIME-TAG, PSA	G130M 1327 A	BUFFER-TIME=50 0;	Sequence 15-16 Non Int in ACQ/PEAKD  FIGURE (202)  20 Secs (20 Secs)  ==>1	
	PECTRUM (COS.sp.904		1327 11	FP-POS=3;	TEST (02)	
	993)			FLASH=YES;		[1]
				LIFETIME-POS=L P4		
Co	mments: Confirmation spectrum	after the ACO/PFAKD Confirmation Spe	ctrum after the	PFAKD (COS sp 904993) RT=100*(	2/3) = ~666, we us 500. This will get us S/N~3 per RE with standard lamp fla.	ash



Proposal 14907, ACO/PEAKXD TEST G130M/1291 (03), completed Wed Jun 06 00:00:52 GMT 2018 **Diagnostic Status: Warning** Scientific Instruments: COS/FUV, COS/NUV Special Requirements: SCHED 100%; ORIENT 314D TO 316 D; BETWEEN 06-AUG-2017:00:00:00 AND 28-AUG-2017:00:00:00 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. This will allow us to measure the plate scale. 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 1.00 0.00 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 plate scales, we then proceed to test PEAKXD with targets offsets by +/-0.5, +/-0.8" in the XD. APT25.2.2, the following roll-angles are availaible the weeks of Aug 07 - Aug 27, 2017. We select a roll-angle of 315 degrees (+/- 1 degree) for visits 03-05, but this may change if the observation dates change. 07 Aug 2017 275.37 - 324.89 08 Aug 2017 276.43 - 325.95 09 Aug 2017 277.50 - 327.02 10 Aug 2017 278.56 - 328.08 11 Aug 2017 279.62 - 329.14 12 Aug 2017 280.68 - 330.20 13 Aug 2017 281.74 - 331.26 14 Aug 2017 282.79 - 332.31 15 Aug 2017 283.85 - 333.37 16 Aug 2017 285.07 - 334.27 17 Aug 2017 286.12 - 335.32 18 Aug 2017 287.17 - 336.37 19 Aug 2017 288.22 - 337.42 20 Aug 2017 289.27 - 338.47 21 Aug 2017 290.32 - 339.52 22 Aug 2017 291.37 - 340.57 23 Aug 2017 292.41 - 341.61 24 Aug 2017 293.65 - 342.45 25 Aug 2017 294.69 - 343.49 26 Aug 2017 295.73 - 344.53 27 Aug 2017 296.77 - 345.57 28 Aug 2017 297.80 - 346.60 29 Aug 2017 298.83 - 347.63 30 Aug 2017 300.06 - 348.46 31 Aug 2017 301.08 - 349.48 01 Sep 2017 302.11 - 350.51 02 Sep 2017 303.13 - 351.53 03 Sep 2017 304.15 - 352.55 04 Sep 2017 305.26 - 353.46 05 Sep 2017 306.27 - 354.47 06 Sep 2017 307.28 - 355.48 07 Sep 2017 308.29 - 356.49 08 Sep 2017 309.49 - 357.29 Note orient and target RA and DEC OFFSETs are defined for August 2017, if the execution date changes, the the orientation and target offsets will also change.

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

(ACQ/PEAKXD TEST G130M/1291 (03)) Warning (Form): For the best data quality, it is strongly recommended that the maximum number of allowed FP-POS positions is used when observing at a given COS CENWAVE setting. See full description for details.

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

Diagnostic

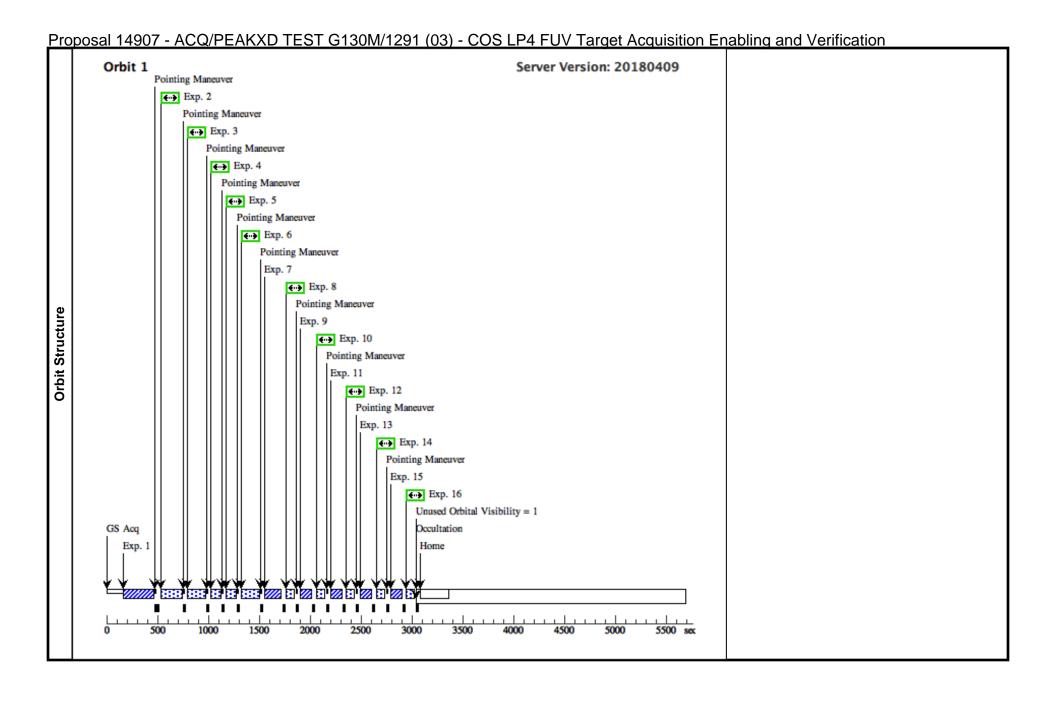
(ACQ/PEAKXD TEST G130M/1291 (03)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

#	Name	Target Coordinates	03) - COS LP4 FUV Target Acq Targ. Coord. Corrections	Fluxes	Miscellaneous
(1) Comm	AZV18	RA: 00 47 12.1700 (11.8007083d)  Dec: -73 06 32.68 (-73.10908d)  Equinox: J2000	Proper Motion RA: -0.0003 sec of time/yr Proper Motion Dec: -0.0035 arcsec/yr Epoch of Position: 2000 osure times derived from previous COS + IUE spec	V=12.48 (B-V)=+0.04	Reference Frame: ICRS
Catego Descri Extend	nems. B21a, Magename Ca pory=STAR ription=[B0-B2 III-I] ded=NO	оназ. В214, тадешта Сюшаз. Потта 21С ехр	osare unies derived from previous COS + 10L speci	irum.	
(3)	AZV18-OFFSET- XD+0.5	Offset from AZV18		V=12.48	Offset Position (AZV18-OFFSET-XD+0.5)
	AD+0.3	RA Offset: 0.0 Degrees		(B-V)=+0.04	
		Dec Offset: -0.5 Arcsec			
Comm	nents: This target is offset +	+0.5" in the XD direction, and is valid for visits 03-	.05 only. The roll angle is 315 +/- 1 degree and is vo	alid for August, 2017. These	e will change if these visits are not executed then.
xed Largetts    DEI	AD_OFFSE1 FLOA1 0.00000 XD_OFFSET FLOAT -0.500000 Category=STAR Description=[B0-B2 III-1]				
(5)	AZV18-OFFSET-	Offset from AZV18		V=12.48	Offset Position (AZV18-OFFSET-XD+0.8)
	XD+0.8	RA Offset: 0.0 Degrees		(B-V)=+0.04	
		Dec Offset: -0.8 Arcsec			
degree DELI DELI DELI COS DELI DELI ORI AD_ XD_ Categ	e and is valid for August, 2 TA_RAD DOUBLE LTA_RA DOUBLE LTA_DEC DOUBLE SDEC DOUBLE LTA_RAD_UNITS STRING LTA_RA_UNITS STRING LTA_DEC_UNITS STRING LENT FLOAT 3 _OFFSET FLOAT	2017. These will change if these visits are not exect 1.8612883e-11 6.7006377e-08 -0.8000001 0.29055060 'Degrees' 'Arcseconds of Time'		et UP on the COS detector	by 0.8" (about 8-9 rows). The roll angle is 315 +/- 1

	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	BOA/MIRR ORA ACQ/I MAGE (COS.ta.904 984)	(1) AZV18	COS/NUV, ACQ/IMAGE, BOA	MIRRORA		GS ACQ SCENARI O BASE1B3		36 Secs (36 Secs) <i>I</i> ==> <i>J</i>	[1]
	Com us A	nments: NUV A CO/IMAGEs ir	CQ/IMAGE with BOA 1 13636 gave a S/N of	+MIRRORA to refine centering. COS 62.6 is 31 seconds (after background	.ta.904984 uses a p subtraction)	previous COS+IUE spect	rum. This ETC25.1.1 g	gives S/N=60 in 27.4 s	seconds, we go for 36s just be to sure.	The previo
	2	G130M - B ASELINE S PECTRUM (COS.sp.906 443)		COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=50 0; FP-POS=3; FLASH=S0200D03 0; LIFETIME-POS=L P4		Sequence 2-8 Non-In tin ACQ/PEAKXD TEST G130M/1291 ( 03)	r - 1	[1]
				correct location of star when it is cent = 35 at wavelength 1310A gives: SNF			1000 = < 666			
	3	G130M - P OSTARG + SPECTRU M1 (-1.6) (COS.sp.906 443)	` ` ` `	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=12 00; FP-POS=3; FLASH=YES; LIFETIME-POS=L P4		Sequence 2-8 Non-In tin ACQ/PEAKXD TEST G130M/1291 ( 03)	130 Secs (130 Secs) [==>]	[1]
es	Com	ments: POSTA	RG TO Move to Y=-1	.6. The vignetting here is 73%, so to n	natch the 34s in 03.	002, we need 35*3.75 =	~130s		T	
Exposures	4	G130M - P OSTARG + SPECTRU M2 (-0.8) (COS.sp.906 443)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=65 0; FP-POS=3; FLASH=YES; LIFETIME-POS=L P4	POS TARG 0,-0.8	Sequence 2-8 Non-In t in ACQ/PEAKXD TEST G130M/1291 ( 03)	r - 1	[1]
	Com			.8. The vignetting here is 23%, so to n					T	
	5	G130M - P OSTARG + SPECTRU M3 (+0.8) (COS.sp.906 443)		COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=65 0; FP-POS=3; FLASH=YES; LIFETIME-POS=L P4	POS TARG 0,0.8	Sequence 2-8 Non-In t in ACQ/PEAKXD TEST G130M/1291 ( 03)	I\1	[1]
	Com	ments: Same a G130M - P	$\frac{(s) 03.004}{(1) (1) (1)}$	COS/FUV. TIME-TAG. PSA	C120M	DITECT TIME_12	DOS TARCO 1.6	Saguanaa 2 9 Non In	120 Saas (120 Saas)	
	υ	OSTARG + SPECTRU M4 (+1.6) (COS.sp.906 443)	``	COS/FUV, HIME-TAU, PSA	G130M 1291 A	BUFFER-TIME=12 00; FP-POS=3; FLASH=YES; LIFETIME-POS=L P4	FUS TARU 0,1.0	Sequence 2-8 Non-In t in ACQ/PEAKXD TEST G130M/1291 ( 03)	130 Secs (130 Secs) [==>]	[1]
	Com	nments: Same a	s 03.003, but at 1.6"							

po	<u>sal 14907 - ACQ/PEAK</u>	<u>XD TEST G130M/129</u>	<u>1 (03) - COS</u>	S LP4 FUV Target Acquisition	<u>on Enabling an</u>	<u>d Verification</u>	
7		COS/FUV, ACQ/PEAKXD, PSA	G130M	LIFETIME-POS=LP	Sequence 2-8 Non-In		
	AKXD - Ce ntered		1291 A	4; NUM-POS=5;	t in ACQ/PEAKXD TEST G130M/1291 (	[==>]	
	(COS.sa.904 990)			NUM-POS=5; STEP-SIZE=0.8	03)		[1]
Com	990) nments: COS.sa.904990 Requested Sig	mal/Noise Patio = 40 000 sines. Tim	a = 0.8084 saaands				
Con	rments: COS.sa.904990 Requested Stg Time Required for Requested SNR in Time Required for Requested SNR in	Segment A only: 1.4029	e = 0.0904 seconas				
The	target should only move slightly (ACQ	D/IMAGE error and counting uncerta	uinty), unless there i:	s residual pointing error from the POS-TARG	's.		
8	G130M - B (1) AZV18	COS/FUV, TIME-TAG, PSA	G130M	BUFFER-TIME=50	Sequence 2-8 Non-In	35 Secs (35 Secs)	
	ASELINE S PECTRUM		1291 A	0;	t in ACQ/PEAKXD TEST G130M/1291 (	[==>]	
	(COS.sp.906			FP-POS=3;	03)		
	443)			FLASH=YES;			[1]
				LIFETIME-POS=L P4			
Con	ments: Spectrum of source to test pre	vious ACQ/PEAKXD centering. COS	S.sp.906443 Exposu	re time (seconds) = $35$ at wavelength $1310A$ g	gives: SNR = 3.8135 (pe	er resolution element). BT=2/3 * 1000	= < 666
9	G130M - PE (5) AZV18-OFFSET	COS/FUV, ACQ/PEAKXD, PSA	G130M	LIFETIME-POS=LP	Sequence 9-10 Non-I		
	AKXD-XD -XD+0.8 +0.8 (UP)		1291 A	4;	nt in ACQ/PEAKXD TEST G130M/1291 (		
	(COS.sa.904			NUM-POS=3;	03)		[1]
_	990)	<i>m</i> , , , , , , , , , , , , , , , , , , ,		STEP-SIZE=1.3			
Con	nments: ACQ/PEAKXD on the target o	iffset by $+0.8$ ".					
COS	S.sa.904990 Requested Signal/Noise Ro Time Required for Requested SNR in Time Required for Requested SNR in	Segment A only: 1.4029	seconds				
10	G130M - Co (5) AZV18-OFFSET COS/FUV, TIME-TAG, PSA		G130M	BUFFER-TIME=50	Sequence 9-10 Non-I	35 Secs (35 Secs)	
	nfirmation -XD+0.8 SPECTRU		1291 A	0;	nt in ACQ/PEAKXD TEST G130M/1291 (	[==>]	
	M			FP-POS=3;	03)		
	(COS.sp.906 443)			FLASH=YES;			[1]
	,			LIFETIME-POS=L P4			
Con	iments: Spectrum of source to test prev	vious ACQ/PEAKXD centering. COS	S.sp.906443 Exposu	re time (seconds) = 35 at wavelength 1310A g	gives: $SNR = 3.8135$ (pe	er resolution element). $BT=2/3*1000$	= < 666
11		COS/FUV, ACQ/PEAKXD, PSA	G130M	LIFETIME-POS=LP	Sequence 11-12 Non	2 Secs (2 Secs)	
	AKXD-XD- 0.8 (DOWN		1291 A	4;	-Int in ACQ/PEAKX D TEST G130M/129	[==>]	
	) `			NUM-POS=3	1 (03)		[1]
	(COS.sa.904 990)						
Con	nments: Back on original target, -0.8"						
COS	S.sa.904990 Requested Signal/Noise Ro Time Required for Requested SNR in Time Required for Requested SNR in	Segment A only: 1.4029	seconds				
12		COS/FUV, TIME-TAG, PSA	G130M	BUFFER-TIME=50	Sequence 11-12 Non	35 Secs (35 Secs)	
	nfirmation SPECTRU		1291 A	0;	-Int in ACQ/PEAKX D TEST G130M/129		
	M			FP-POS=3;	1 (03)		
	(COS.sp.906 443)			FLASH=YES;			[1]
	<del></del> 3)			LIFETIME-POS=L P4			
Com	umants. Spactrum of source to test	vious ACO/PEAKVD contoning CO	S on 006112 Evensor.	re time (seconds) = 35 at wavelength 1310A s	aines: CNP = 2 0125 (	or resolution element) DT_2/2 * 1000	- / 666
Con	ments. Spectrum of source to test prev	vious ACQ/I EARAD centering. COS	э.sp. 200 <del>44</del> 3 Ехрови	re ume (seconus) – 55 ui waveiengin 1510A §	51ves. 51vr – 5.0155 (pe	1 resolution etement). B1 –2/3 · 1000	_ < 000

Proposal 14907 - ACQ/PEAKXD TEST G130M/1291 (03) - COS LP4 FUV Target Acquisition Enabling and Verification Sequence 13-14 Non 2 Secs (2 Secs) G130M -PE (3) AZV18-OFFSET COS/FUV, ACO/PEAKXD, PSA G130M LIFETIME-POS=LP AKXD- XD -XD+0.5 -Int in ACO/PEAKX 1291 A D TEST G130M/129 |I==>I+0.5[1] (COS.sa.904 1 (03) 990) 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 G130M -Co (3) AZV18-OFFSET COS/FUV, TIME-TAG, PSA G130M BUFFER-TIME=50 Sequence 13-14 Non 35 Secs (35 Secs) -Int in ACQ/PEAKX nfirmation -XD+0.5 0: 1291 A **SPECTRU** D TEST G130M/129 FP-POS=3; 1 (03) M (COS.sp.906 FLASH=YES; [1] 443) LIFETIME-POS=L P4 Comments: Spectrum of source to test previous ACO/PEAKXD centering. COS.sp.906443 Exposure time (seconds) = 35 at wavelength 1310A gives: SNR = 3.8135 (per resolution element). BT=2/3 \* 1000 = < 666 Sequence 15-16 Non 2 Secs (2 Secs) 15 G130M -PE (1) AZV18 COS/FUV, ACQ/PEAKXD, PSA G130M LIFETIME-POS=LP AKXD- XD -Int in ACQ/PEAKX 4; 1291 A D TEST G130M/129 -0.5 NUM-POS=3; (COS.sa.904 1 (03) 990) STEP-SIZE=1.25; [1] CENTER=FLUX-W T-FLR Comments: ACO/PEAKXD on the target offset by -0.5". CENTER IS SET to FLUX-WT-FLR, which is wrong for this NUM-POS, but we want to test that we can command it. We can figure the correct centering from the e data. This is placed as the last exposure as to not affect subsequent TAS. 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 G130M - Co (1) AZV18 COS/FUV, TIME-TAG, PSA G130M BUFFER-TIME=50 Sequence 15-16 Non 35 Secs (35 Secs) nfirmation -Int in ACQ/PEAKX 0; [==>] 1291 A D TEST G130M/129 SPECTRU FP-POS=3; M 1 (03) (COS.sp.906 FLASH=YES; [1] 443) LIFETIME-POS=L Comments: Spectrum of source to test previous ACO/PEAKXD centering. COS.sp.906443 Exposure time (seconds) = 35 at wavelength 1310A gives: SNR = 3.8135 (per resolution element). BT=2/3\*1000 = < 666.



Proposal 14907, ACQ/PEAKXD TEST G160M/1600 (04), completed

Wed Jun 06 00:00:52 GMT 2018

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%; ORIENT 314D TO 316 D; BETWEEN 07-AUG-2017:00:00:00 AND 28-AUG-2017:00:00:00

Comments: ACQ/PEAKXD Test for G160M/1600. The target is AVZ18 (the SMOV TA target). 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. This will allow us to measure the plate scale. 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:

1.60

%LOSS ET equivalent/second" 0.000.00 1.00 0.80 22.58 1.29

73.33 3.75

We expect 700/1800 FUVA/FUVB counts/sec over the ~2300 RE, the target spectrum is ~flat, so we get 3.8 FUV count/RE in 50s. T ~ 50s exposures at abs(XD) < 0.5, equates to 65s at +/- 0.8", 180s at +/- 1.6"

We then proceed to test PEAKXD with targets offsets by +/-0.5, +/-0.8" in the XD.

The roll angle is 315 degrees (+/- 1 degree, same for visits 03-05). Note orient and target RA and DEC OFFSETs are defined for August 2017 (see Visit 03 comments), if the execution date changes, then the orientation and target offsets may also change.

(ACQ/PEAKXD TEST G160M/1600 (04)) Warning (Form): COS ACQ/PEAKXD exposure should be followed by an ACQ/PEAKD exposure in the Visit.

(ACQ/PEAKXD TEST G160M/1600 (04)) Warning (Form): For the best data quality, it is strongly recommended that the maximum number of allowed FP-POS positions is used when observing at a given COS CENWAVE setting. See full description for details.

Diagnostic (ACQ/PEAKXD TEST G160M/1600 (04)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

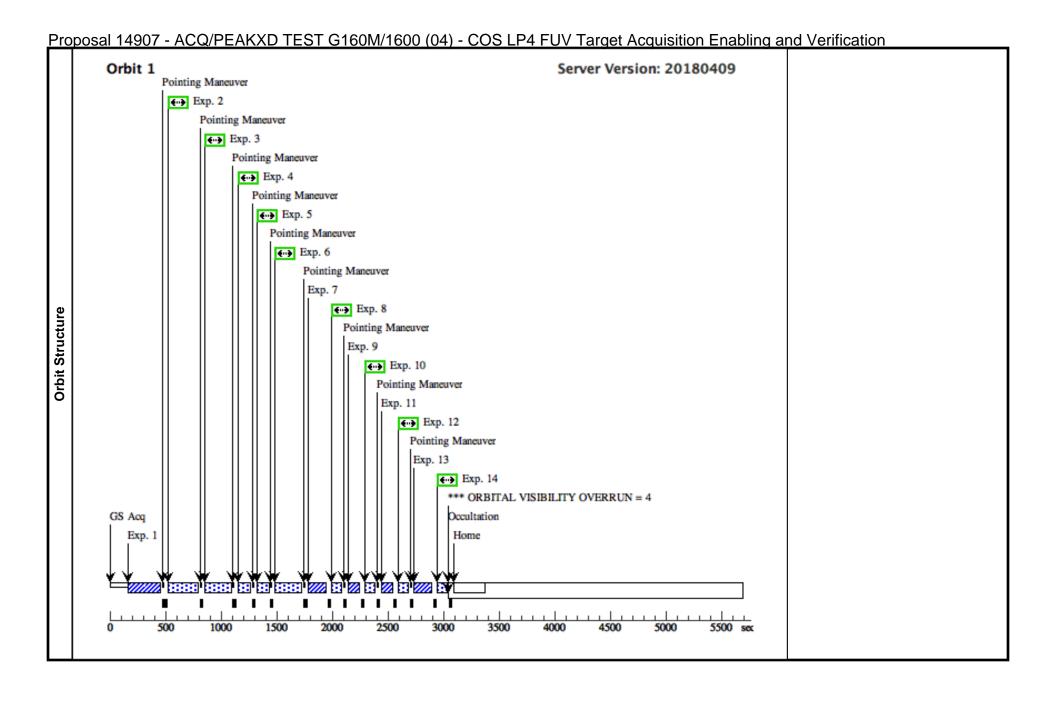
(ACQ/PEAKXD TEST G160M/1600 (04)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

ACO/PEAKXD TEST G160M/1600 (04)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

#	Name	Target Coordinates	04) - COS LP4 FUV Target Acq Targ. Coord. Corrections	Fluxes	Miscellaneous
(1) <i>Comm</i>	AZV18	RA: 00 47 12.1700 (11.8007083d)  Dec: -73 06 32.68 (-73.10908d)  Equinox: J2000  ouds R2Ia Masellanic Clouds Nominal FTC exp	Proper Motion RA: -0.0003 sec of time/yr Proper Motion Dec: -0.0035 arcsec/yr Epoch of Position: 2000 osure times derived from previous COS + IUE speci	V=12.48 (B-V)=+0.04	Reference Frame: ICRS
Catego Descri Extend	ory=STAR iption=[B0-B2 III-I] ded=NO		onare unies derived from previous COS + 102 speci		
(3)	AZV18-OFFSET- XD+0.5	Offset from AZV18		V=12.48	Offset Position (AZV18-OFFSET-XD+0.5)
	AD+0.3	RA Offset: 0.0 Degrees		(B-V)=+0.04	
		Dec Offset: -0.5 Arcsec			
Comm	nents: This target is offset +	+0.5" in the XD direction, and is valid for visits 03-	.05 only. The roll angle is 315 +/- 1 degree and is vo	alid for August, 2017. These	e will change if these visits are not executed then.
step   DELL DELL DELL DELL DELL DELL DELL DE	AD_OFFSE1				
(5)	AZV18-OFFSET-	Offset from AZV18		V=12.48	Offset Position (AZV18-OFFSET-XD+0.8)
	XD+0.8	RA Offset: 0.0 Degrees		(B-V)=+0.04	
		Dec Offset: -0.8 Arcsec			
degree DEL1 DEL DEL COS DEL DEL ORII AD_ XD_ Catego	e and is valid for August, 2 TA_RAD DOUBLE LTA_RA DOUBLE LTA_DEC DOUBLE SDEC DOUBLE LTA_RAD_UNITS STRING LTA_RA_UNITS STRING LTA_DEC_UNITS STRING LTA_DEC_UNITS STRING LTA_T FLOAT 3 _OFFSET FLOAT	2017. These will change if these visits are not exect 1.8612883e-11 6.7006377e-08 -0.8000001 0.29055060 'Degrees' 'Arcseconds of Time'		et UP on the COS detector	by 0.8" (about 8-9 rows). The roll angle is 315 $\pm$ 1

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	BOA/MIRR ORA ACQ/I MAGE (COS.ta.904 984)		COS/NUV, ACQ/IMAGE, BOA	MIRRORA		GS ACQ SCENARI O BASE1B3		33 Secs (33 Secs)  [==>]	[1]
Cous	omments: NUV A ACQ/IMAGEs i	.CQ/IMAGE with BO n 13636 gave a S/N o	A+MIRRORA to refine centering. COS f 62.6 is 31 seconds (after background	.ta.904984 uses a p subtraction)	previous COS+IUE spect	rum. This ETC25.1.1 g	gives S/N=60 in 27.4 s	seconds, we go for 33s just be to sure.	The previo
2	G160M - B ASELINE S PECTRUM (COS.sp.905 008)		COS/FUV, TIME-TAG, PSA	G160M 1600 A	BUFFER-TIME=50 0; FP-POS=3; FLASH=S0080D03 0; LIFETIME-POS=L P4		Sequence 2-8 Non-In t in ACQ/PEAKXD TEST G160M/1600 ( 04)		[1]
C. C.	Comments: Spectrum of source to define G160M/1600 location of a target when it is centered w/ NUV ACQ/IMAGE.  COS.sp.905008, S/N/RE=4 (1620A) = 50s. BT=2/3*940 = 600 -> 500								
3	G160M - P OSTARG + SPECTRU M1 (-1.6) (COS.sp.905 008)		COS/FUV, TIME-TAG, PSA	G160M 1600 A	BUFFER-TIME=12 00; FP-POS=3; FLASH=YES; LIFETIME-POS=L P4	POS TARG 0,-1.6	Sequence 2-8 Non-In t in ACQ/PEAKXD TEST G160M/1600 ( 04)	f . 1	[1]
<b>က</b>	Comments: POSTARG TO Move to Y=-1.6. Vignetting is 73%, so we need $ET=50*3.75 > 188s$ BT set to 1200. (lower count rate due to vignetting)								
Exposures 4	G160M - P OSTARG + SPECTRU M2 (-0.8) (COS.sp.905 008)	(1) AZV18	COS/FUV, TIME-TAG, PSA	G160M 1600 A	BUFFER-TIME=65 0; FP-POS=3; FLASH=YES; LIFETIME-POS=L P4	POS TARG 0,-0.8	Sequence 2-8 Non-In t in ACQ/PEAKXD TEST G160M/1600 ( 04)	<i>I</i> 1	[1]
C			0.8. Vignetting is 23%, so we need ET=					T	1
5	G160M - P OSTARG + SPECTRU M3 (+0.8) (COS.sp.905 008)	`	COS/FUV, TIME-TAG, PSA	G160M 1600 A	BUFFER-TIME=65 0; FP-POS=3; FLASH=YES; LIFETIME-POS=L P4	POS TARG 0,0.8	Sequence 2-8 Non-In t in ACQ/PEAKXD TEST G160M/1600 ( 04)	I>1	[1]
$C_{i}$	Comments: Same as 04.004, but at +0.8"								
6	G160M - P OSTARG + SPECTRU M4 (+1.6) (COS.sp.905 008)		COS/FUV, TIME-TAG, PSA	G160M 1600 A	BUFFER-TIME=12 00; FP-POS=3; FLASH=YES; LIFETIME-POS=L P4	POS TARG 0,1.6	Sequence 2-8 Non-In t in ACQ/PEAKXD TEST G160M/1600 ( 04)	190 Secs (190 Secs) [==>]	[1]
C		us 04.003, but at +1.6							
7	G160M - PE AKXD - Ce ntered (COS.sa.905 009)	(1) AZV18	COS/FUV, ACQ/PEAKXD, PSA	G160M 1600 A	LIFETIME-POS=LP 4; NUM-POS=5; STEP-SIZE=0.8		Sequence 2-8 Non-In t in ACQ/PEAKXD TEST G160M/1600 ( 04)	[× ]	[1]
C	omments: S/N ~	60 (A + B  is  S/N = 40  is	n 0.7s) The target should only move slig	ghtly (ACQ/IMAGE	E error and counting unce	ertainty), unless there	is residual pointing erro	or from the POS-TARGs.	

Proposal 14907 - ACQ/PEAKXD TEST G160M/1600 (04) - COS LP4 FUV Target Acquisition Enabling and Verification BUFFER-TIME=60 G160M - B (1) AZV18 COS/FUV, TIME-TAG, PSA G160M Sequence 2-8 Non-In 42 Secs (42 Secs) ASELINE S t in ACO/PEAKXD 0: 1600 A TEST G160M/1600 ( |I==>IPECTRUM FP-POS=3: (COS.sp.905 (04)008)FLASH=YES: [1] LIFETIME-POS=L Comments: Post PEAKXD confirmation spectrum. COS.sp. 905008, S/N/RE=4 (1620A) = 50s. BT=2/3\*940=<613G160M - PE (5) AZV18-OFFSET COS/FUV, ACO/PEAKXD, PSA LIFETIME-POS=LP Sequence 9-10 Non-I 2 Secs (2 Secs) G160M AKXD-XD--XD+0.8 nt in ACQ/PEAKXD 1600 A I = = > 1TEST G160M/1600 ( 0.8 (UP) NUM-POS=3 [1] (COS.sa.905 009) Comments: PEAKXD on target offset by +0.8". Default STEP\_SIZE G160M - Co (5) AZV18-OFFSET COS/FUV, TIME-TAG, PSA G160M BUFFER-TIME=50 Sequence 9-10 Non-I 42 Secs (42 Secs) nfirmation -XD+0.8nt in ACO/PEAKXD 1600 A SPECTRU TEST G160M/1600 ( FP-POS=3; (04)M (COS.sp.905 FLASH=YES: [1] 008LIFETIME-POS=L Comments: Post PEAKXD confirmation spectrum. COS.sp.905008, S/N/RE=4 (1620A) = 50s, BT=2/3\*940 = 600 -> 500 G160M - PE (1) AZV18 COS/FUV, ACO/PEAKXD, PSA G160M LIFETIME-POS=LP Sequence 11-12 Non | 2 Secs (2 Secs) AKXD-XD--Int in ACO/PEAKX 1600 A 0.8 (DOWN D TEST G160M/160 0(04)[1] (COS.sa.905 009) Comments: PEAKXD on target offset by -0.8". Full Default 12 G160M - Co (1) AZV18 COS/FUV, TIME-TAG, PSA G160M BUFFER-TIME=50 Sequence 11-12 Non 42 Secs (42 Secs) -Int in ACQ/PEAKX [==>]nfirmation 0; 1600 A D TEST G160M/160 **SPECTRU** FP-POS=3; M 0(04)(COS.sp.905 FLASH=YES; [1] 008) LIFETIME-POS=L Comments: Post PEAKXD confirmation spectrum. COS.sp.905008, S/N/RE=4 (1620A) = 50s. BT=2/3\*940 = 600 -> 500 G160M - PE (3) AZV18-OFFSET COS/FUV, ACO/PEAKXD, PSA LIFETIME-POS=LP Sequence 13-14 Non | 1 Secs (1 Secs) G160M AKXD-XD -XD+0.5 -Int in ACQ/PEAKX 1600 A I = = > 1D TEST G160M/160 (0.5)NUM-POS=5: (COS.sa.905 0(04)[1] CENTER=FLUX-W 009)Comments: PEAKXD offset by +0.5" using Non-default CENTER (FW), hich is wrong for this NUM-POS, but we want to test that we can command it. We can figure the correct centering from the data. This is placed as the last exposure as to not affect subsequent TAS. G160M - Co (3) AZV18-OFFSET COS/FUV, TIME-TAG, PSA G160M BUFFER-TIME=50 Sequence 13-14 Non 42 Secs (42 Secs) nfirmation -XD+0.5 -Int in ACQ/PEAKX 1600 A D TEST G160M/160 |I==>JSPECTRU FP-POS=3: M 0(04)(COS.sp.905 FLASH=YES; [1] 008)LIFETIME-POS=L Comments: Post PEAKXD confirmation spectrum. COS.sp.905008, S/N/RE=4 (1620A) = 50s. BT=2/3\*940 = 600 -> 500



Proposal 14907, ACQ/PEAKXD TEST G140L/1280 (05), completed

Wed Jun 06 00:00:52 GMT 2018

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%; ORIENT 314D TO 316 D; BETWEEN 07-AUG-2017:00:00:00 AND 28-AUG-2017:00:00:00

Comments: ACQ/PEAKXD Test for G140L The target is AVZ18 (the SMOV TA target). After obtaining a good spectrum of the centered target, We then proceed to take spectra at the following positions (-1.6,-0.8,0.8,1.6)" in the XD direction.. This will allow us to measure the plate scale. 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"

0.000.00 1.00 22.58 1.29 0.80 73.33 3.75 1.60

We then proceed to test PEAKXD with targets offsets by +/-0.5, +/-0.8" in the XD.

The roll angle is 315 degrees (+/- 1 degree, same for visits 03-05) Note orient and target RA and DEC OFFSETs are defined for August, 2017 (see Visit 03 comments), if the execution date changes, then the orientation and target offsets may also change.

(ACO/PEAKXD TEST G140L/1280 (05)) Warning (Form): COS ACO/PEAKXD exposure should be followed by an ACO/PEAKD exposure in the Visit. Diagnostic

(ACO/PEAKXD TEST G140L/1280 (05)) Warning (Form): For the best data quality, it is strongly recommended that the maximum number of allowed FP-POS positions is used when observing at a given COS CENWAVE setting. See full description for details.

(ACQ/PEAKXD TEST G140L/1280 (05)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(ACQ/PEAKXD TEST G140L/1280 (05)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

	# Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1) AZV18	RA: 00 47 12.1700 (11.8007083d) Dec: -73 06 32.68 (-73.10908d) Equinox: J2000	Proper Motion RA: -0.0003 sec of time/yr Proper Motion Dec: -0.0035 arcsec/yr Epoch of Position: 2000	V=12.48 (B-V)=+0.04	Reference Frame: ICRS				
	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								
l	(3) AZV18-OFFSET-	Offset from AZV18		V=12.48	Offset Position (AZV18-OFFSET-XD+0.5)				
l	XD+0.5	RA Offset: 0.0 Degrees		(B-V)=+0.04					
l		Dec Offset: -0.5 Arcsec							
l	Comments: This target is offset +0	0.5" in the XD direction, and is valid for visits 03	-05 only. The roll angle is 315 +/- 1 degree and is vo	alid for August, 2017. Thes	e will change if these visits are not executed then.				
Fixed Targets	DELTA_RA DOUBLE 4 DELTA_DEC DOUBLE COSDEC DOUBLE DELTA_RAD_UNITS STRING DELTA_RA_UNITS STRING DELTA_DEC_UNITS STRING ORIENT FLOAT 31. AD_OFFSET FLOAT	'Arcseconds of Time'							
l	(5) AZV18-OFFSET-	Offset from AZV18		V=12.48	Offset Position (AZV18-OFFSET-XD+0.8)				
l	XD+0.8	RA Offset: 0.0 Degrees		(B-V)=+0.04	,				
1		Dec Offset: -0.8 Arcsec							
	degree and is valid for August, 20 DELTA_RAD DOUBLE I DELTA_RA DOUBLE I DELTA_DEC DOUBLE COSDEC DOUBLE DELTA_RAD_UNITS STRING DELTA_RAD_UNITS STRING DELTA_ROCUNITS STRING DELTA_DEC_UNITS STRING ORIENT FLOAT 31. AD_OFFSET FLOAT	017. These will change if these visits are not exect 8612883e-11 6,7006377e-08 -0.80000001 0.29055060 'Degrees' 'Arcseconds of Time'	-05 only. A +0.8" offset is designed to move the targuted then.	et UP on the COS detector	by 0.8" (about 8-9 rows). The roll angle is 315 +/- 1				

101	#	Label	Target	AKXD 1EST G14UL/1280 Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Regs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
"	'	(ETC Run)		Comignitude, aperture		Opt. 1 arams.	Special Reds.	Groups	Exp. Time (Total)/[Actual Dail.]	O I Dit
	1	BOA/MIRR ORA ACQ/I	(1) AZV18	COS/NUV, ACQ/IMAGE, BOA	MIRRORA		GS ACQ SCENARI O BASE1B3		33 Secs (33 Secs)	
		MAGE (COS.ta.904				O BASEIBS		[==>]	[1]	
	Com	984)	CO/IMACE with P	OA - MIDDODA to refine contains COS	ta 004084 usas a	provious COS LIUE space	tour This ETC25 1 1	rivas S/N=60 in 27.4	seconds we so for 22s just be to sure	The previo
i	us A	omments: 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 33s just be to sure. The previous ACQ/IMAGEs in 13636 gave a S/N of 62.6 is 31 seconds (after background subtraction)								
	2	G140L - BA SELINE SP	(1) AZV18	COS/FUV, TIME-TAG, PSA	G140L	BUFFER-TIME=50		Sequence 2-8 Non-In t in ACO/PEAKXD	34 Secs (34 Secs)	
		<b>ECTRUM</b>			1280 A	0; FP-POS=3;		TEST G140L/1280 (	[==>]	
		(COS.sp.906 453)				FLASH=S0080D03		05)		
		433)				0;				[1]
						LIFETIME-POS=L P4				
		Comments: Spectrum of source to define the G140L/1280 XD location of target when it is centered w/ NUV ACQ/IMAGE. COS.sp.906453. ET (seconds) = 35 at wavelength 1310A gives: SNR = 9.25 (per RE), 30s is enough. BT=2/3*876 < 584-> 500								
	гоид З	gn. B1=2/3*8/ G140L- PO		COS/FUV, TIME-TAG, PSA	G140L	BUFFER-TIME=12	POS TARG 0 -1 6	Sequence 2-8 Non-In	115 Secs (115 Secs)	
ľ	,	STARG + S	(1) 112 1 10	COS/10 V, TIME TAG, 15/1	1280 A	00;	105 TARG 0,-1.0	t in ACQ/PEAKXD TEST G140L/1280 ( 05)	[==>]	
		PECTRUM 1 (-1.6)				FP-POS=3;				[1]
		(COS.sp.906 453)				FLASH=YES;				
		433)				LIFETIME-POS=L P4				
<u>ွှ</u>	Com	ments: POSTA	ARG TO Move to Y=	=-1.6. Vignetting is 73% so ET shoud be	30*3.75 = 112 BT	-> 1200 (lower count rai	te due to vignetting)			1
Exposures	4		6140L - PO (1) AZV18 COS/FUV, TIME-TAG, PSA	COS/FUV, TIME-TAG, PSA	G140L	BUFFER-TIME=65	POS TARG 0,-0.8	Sequence 2-8 Non-In	45 Secs (45 Secs)	
os		STARG + S PECTRUM		1280 A	0; ED DOG 2		t in ACQ/PEAKXD TEST G140L/1280 (	[==>]		
쏤		2 (-0.8)	(-0.8)		FP-POS=3;		05)		[1]	
ш		(COS.sp.906 453)			FLASH=YES; LIFETIME-POS=L				[1]	
						P4				
Ľ	Com	Comments: POSTARG TO Move to Y=-0.8". Vignetting is 23% so ET shoud be 30*3.75 = 39 BT -> 650 (lower count rate due to vignetting)								
1	5	G140L - PO STARG + S	(1) AZV18	COS/FUV, TIME-TAG, PSA	G140L	BUFFER-TIME=65 0;	POS TARG 0,+0.8	Sequence 2-8 Non-In t in ACQ/PEAKXD TEST G140L/1280 ( 05)		
		PECTRUM			1280 A	FP-POS=3;			[==>]	
		3 (+0.8) (COS.sp.906				FLASH=YES;				[1]
		453) <sup>1</sup>				LIFETIME-POS=L				
	C	Cama	05 004 had at 10	0"		P4				
6	com S	G140L - PO	<u>us 05.004, but at +0</u> (1) AZV18	COS/FUV, TIME-TAG, PSA	G140L 1280 A	BUFFER-TIME=12	POS TARG 0,1.6	Sequence 2-8 Non-Ir t in ACQ/PEAKXD TEST G140L/1280 ( 05)	115 Secs (115 Secs)	
		STARG + S	(1)112110	CO5/1°C V, TIME-1'AG, 1'5'A		00;			[==>]	
		PECTRUM 4 (1.6)				FP-POS=3;				
		(COS.sp.906	p.906		FLASH=YES;		,		[1]	
		453)				LIFETIME-POS=L P4				
],	<u>Com</u>	ıments: Same a	us 05.003, but at +1	.6"		<u> </u>				<u> </u>
ſ	7	G140L - PE	(1) AZV18	COS/FUV, ACQ/PEAKXD, PSA	G140L	LIFETIME-POS=LP		Sequence 2-8 Non-In	3 Secs (3 Secs)	
		AKXD - Ce ntered			1280 A	4;		t in ACQ/PEAKXD TEST G140L/1280 (	[==>]	
		(COS.sa.906				NUM-POS=5; STEP-SIZE=0.8		05)		[1]
	Com	454) ments: ACO/P	PEAKYD tost on a c	entered target. COS.sa.906454 Requeste	d Signal/Noise Dat		O seconds			
	Com	inenis. ACQ/F	LARAD IESI ON U C	emerea iargei. COS.sa.300454 Requeste	a signai/ivoise Kai	10 - 70 gives. 1 ime - 1.0	) seconus			

Proposal 14907 - ACQ/PEAKXD TEST G140L/1280 (05) - COS LP4 FUV Target Acquisition Enabling and Verification G140L - BA (1) AZV18 COS/FUV, TIME-TAG, PSA G140L BUFFER-TIME=50 Sequence 2-8 Non-In 32 Secs (32 Secs) SELINE SP 0: t in ACO/PEAKXD 1280 A **ECTRUM** TEST G140L/1280 ( FP-POS=3: 05) (COS.sp.906 453) FLASH=YES: [1] LIFETIME-POS=L Comments: COS.sp.617114 gives S/N/RE = 10 at 1400A in 29.5 seconds. BT=2/3 (600) = 400 G140L - PE (5) AZV18-OFFSET COS/FUV, ACO/PEAKXD, PSA LIFETIME-POS=LP Sequence 9-10 Non-I 3 Secs (3 Secs) G140L AKXD-XD -XD+0.8 nt in ACQ/PEAKXD 1280 A [==>] TEST G140L/1280 ( +0.8 (UP) NUM-POS=3; [1] (COS.sa.906 05) 454) STEP-SIZE=1.3 Comments: ACQ/PEAKXD on the target offset by +1.0". COS.sa.906454 Requested Signal/Noise Ratio = 40 gives: Time = 1.0 seconds G140L- Con (5) AZV18-OFFSET COS/FUV, TIME-TAG, PSA G140L BUFFER-TIME=50 Sequence 9-10 Non-I 32 Secs (32 Secs) firmation SP -XD+0.8 0: nt in ACO/PEAKXD 1280 A **ECTRUM** TEST G140L/1280 ( FP-POS=3; 05) (COS.sp.906 453) FLASH=YES: [1] LIFETIME-POS=L Comments: COS.sp.617114 gives S/N/RE = 10 at 1400A in 29.5 seconds. BT = 2/3 (600) = 400 G140L - PE (1) AZV18 COS/FUV, ACO/PEAKXD, PSA G140L LIFETIME-POS=LP Sequence 11-12 Non 3 Secs (3 Secs) -Int in ACO/PEAKX AKXD-XD-1280 A 0.8 (DOWN D TEST G140L/128 NUM-POS=3 0(05)[1] (COS.sa.906 454) Comments: ACQ/PEAKXD on the target offset by -1.0". COS.sa.906454 Requested Signal/Noise Ratio = 40 gives: Time = 1.0 seconds 12 G140L- Con (1) AZV18 BUFFER-TIME=50 COS/FUV, TIME-TAG, PSA G140L Sequence 11-12 Non | 32 Secs (32 Secs) -Int in ACO/PEAKX firmation S 0; 1280 A [==>] D TEST G140L/128 PECTRUM FP-POS=3; (COS.sp.906 0(05)453) FLASH=YES; [1] LIFETIME-POS=L Comments: COS.sp.617114 gives S/N/RE = 10 at 1400A in 29.5 seconds. BT=2/3 (600) = 400 G140L - PE (3) AZV18-OFFSET COS/FUV, ACQ/PEAKXD, PSA LIFETIME-POS=LP Sequence 13-14 Non | 1 Secs (1 Secs) G140L AKXD-XD -XD+0.5 -Int in ACQ/PEAKX 1280 A f = = > 1+0.5D TEST G140L/128 [1] (COS.sa.906 0(05)454) Comments: ACO/PEAKXD on the target offset by +0.5". COS.sa.906454 Requested Signal/Noise Ratio = 40 gives: Time = 1.0 seconds, 1s here, for S/N=40. FULL defaults. G140L - Co (3) AZV18-OFFSET COS/FUV, TIME-TAG, PSA G140L BUFFER-TIME=50 Sequence 13-14 Non 32 Secs (32 Secs) nfirmation -XD+0.5-Int in ACO/PEAKX 1280 A f = = > 1SPECTRU D TEST G140L/128 FP-POS=3: M 0(05)(COS.sp.906 FLASH=YES; [1] 453) LIFETIME-POS=L P4 Comments: COS.sp.617114 gives S/N/RE = 10 at 1400A in 29.5 seconds. BT=2/3 (600) = 400

Proposal 14907 - ACQ/PEAKXD TEST G140L/1280 (05) - COS LP4 FUV Target Acquisition Enabling and Verification G140L - PE (1) AZV18 COS/FUV, ACQ/PEAKXD, PSA LIFETIME-POS=LP G140L AKXD-XD 4; 1280 A +0.5NUM-POS=5; (COS.sa.906 0(05)[1] CENTER=BRIGHT 454) **EST** Comments: ACO/PEAKXD on the target offset by -0.5". COS.sa.906454 Requested Signal/Noise Ratio = 40 gives: Time = 1.0 seconds Non-default Centering (Brightest), which is wrong for this NUM-POS, but we wa nt to test that we can command it. We can figure the correct centering from the data. This is placed as the last exposure as to not affect subsequent TAS. G140L - Co (1) AZV18 COS/FUV, TIME-TAG, PSA G140L BUFFER-TIME=50 Sequence 15-16 Non 32 Secs (32 Secs)

FP-POS=3;

FLASH=YES;

LIFETIME-POS=L

0;

P4

1280 A

-Int in ACQ/PEAKX

D TEST G140L/128

0 (05)

*[==>1* 

[1]

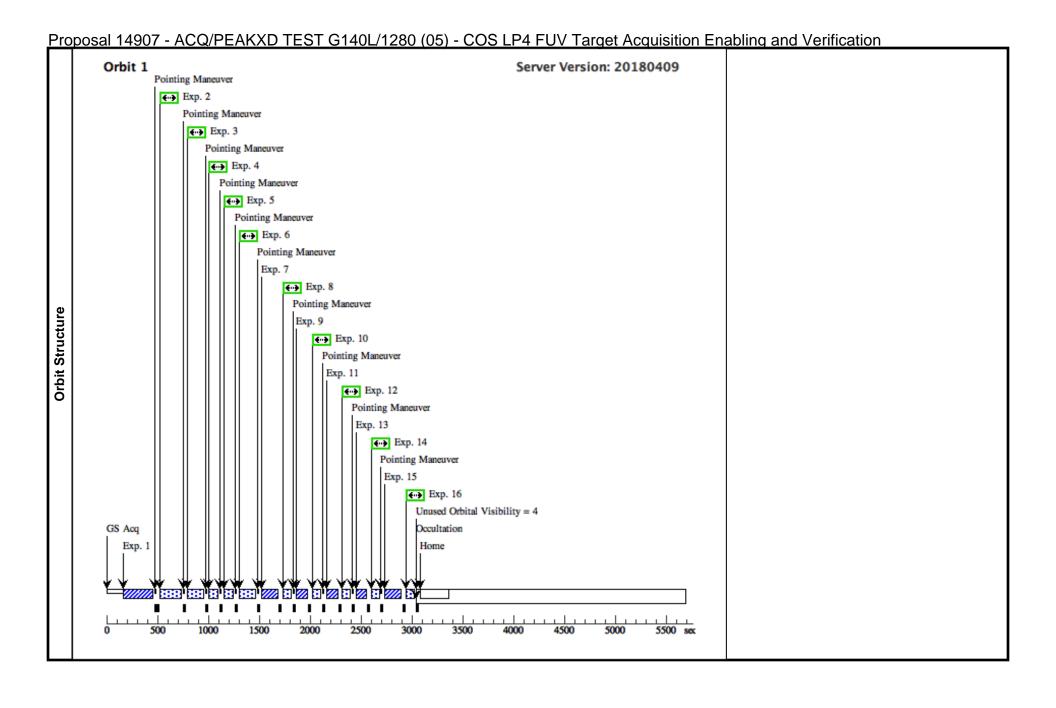
Comments: COS.sp.617114 gives S/N/RE = 10 at 1400A in 29.5 seconds. BT=2/3 (600) = 400

nfirmation

SPECTRU

M (COS.sp.906

453)



Proposal 14907 - LP4 Verification Visit (06) - COS LP4 FUV Target Acquisition Enabling and Verification

Proposal 14907, LP4 Verification Visit (06), completed Wed Jun 06 00:00:52 GMT 2018 Diagnostic Status: Warning Scientific Instruments: COS/FUV, COS/NUV Special Requirements: ORIENT 69D TO 71 D; BETWEEN 02-OCT-2017:00:00:00 AND 06-OCT-2017:00:00:00 Comments: Test ACQ/PEAKXD after the LP4 Move. Start with G130M/1291/PEAKXD with N=3, 5, and 7 using STEP\_SIZE=DEF. All exposures use LIFETIME-POS=DEF. Then test each grating for targets offset by +/- 0.8" using nominal N>1 PEAKXDS. Then perform a full TA sequence with one G160M/1577, (SEARCH+PEAKXD+PEAKD) and a PEAKXD+PEAKD with G130M/1291. Orientation for Visit 06 is currently set to 70 +/- 1 deg, which is good the week of Oct 2, 2017. The date of the start of Cycle 25 and the LP4 move. 29 Sep 2017 070.64 - 080.64 30 Sep 2017 069.75 - 079.75 01 Oct 2017 068.86 - 078.86 02 Oct 2017 067.97 - 077.97 03 Oct 2017 067.06 - 077.06 04 Oct 2017 066.16 - 076.16 05 Oct 2017 065.24 - 075.24 06 Oct 2017 064.32 - 074.32 07 Oct 2017 063.40 - 073.40 08 Oct 2017 062.47 - 072.47 09 Oct 2017 061.53 - 071.53 10 Oct 2017 060.59 - 070.59 **Diagnostics** (LP4 Verification Visit (06)) Warning (Form): For the best data quality, it is strongly recommended that the maximum number of allowed FP-POS positions is used when observing at a given COS CENWAVE setting. See full description for details.

Proposal 14907 - LP4 Verification Visit (06) - COS LP4 FUV Target Acquisition Enabling and Verification

#	Name	Target Coordinates	4 FUV Target Acquisition Enactor 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					
Commo	Comments: This object is visible all year.									
The or	Proper Motions from 2008ApJS175297A and are [12,-32] mas/yr. The original proposal used [0.0014 sec of time/yr, -0.0342 "/yr]. CRS coord. (ep=J2000) : 16 58 51.12 +34 18 53.3									
Catego Descri	urget used is WD1657+343 au ory=STAR option=[DA] led=NO	nd the exposure times are based on a spectrum	provided by A. Aloisi (extrapolated in waveleng	gth).						
(61)	WD1657+343-OFFSE 1AD-1XD-1.4AS	Γ- Offset from WD1657+343 RA Offset: 1.6267059E-4 Degrees Dec Offset: -1.3289261 Arcsec	Radial Velocity: 78 km/sec	V=16.4+/-0.1	Offset Position (WD1657+343-OFFSET-1AD-1XD-1.4AS)					
Lixed Targets  DELL COSS. DELL COSS. DELL COSS. DELL COSS. CATEGO DESCRIPTION DELL COSS.	TA_RAD DOUBLE 0.1 TA_RA DOUBLE 0.1 TA_DEC DOUBLE 0.1 TA_RAD_UNITS STRING 1.4 TA_RAD_UNITS STRING 1.4 TA_DEC_UNITS STRING 1.4 TA_DEC_UNITS STRING 1.4 TA_DET FLOAT 70.0 OFFSET FLOAT 1.0	00016267059 1.58561411 -1.3289261 82595265 'Degrees' vrcseconds of Time' 'Arcseconds'	visit 06 only. The roll angle is 70 +/- 1 degree o	ana is vaita for the week of OC1 2	, 2017.					
(63)	WD1657+343-OFFSE XD+0.8	Γ- Offset from WD1657+343 RA Offset: -2.4384174E-4 Degrees Dec Offset: 0.33809462 Arcsec	Radial Velocity: 78 km/sec	V=16.4+/-0.1	Offset Position (WD1657+343-OFFSET-XD+0.8)					
DEL' DEL' COSS. DEL' DEL' DEL' ORIE AD_C XD_c Catego	TA_RAD DOUBLE -0 TA_RA DOUBLE -0 TA_DEC DOUBLE DEC DOUBLE 0. TA_RAD_UNITS STRING TA_RA_UNITS STRING 'A TA_DEC_UNITS STRING ENT FLOAT 70.0 OFFSET FLOAT 0.0	8" in the XD direction, and is valid for visit 06 .00024384174 0.87783027 0.33809462 82595265 'Degrees' vrcseconds of Time' 'Arcseconds'	only. The roll angle is 70 +/- 1 degree and is v	alid for the week of OCT 2, 2017.						

Proposal 14907 - LP4 Verification Visit (06) - COS LP4 FUV Target Acquisition Enabling and Verification

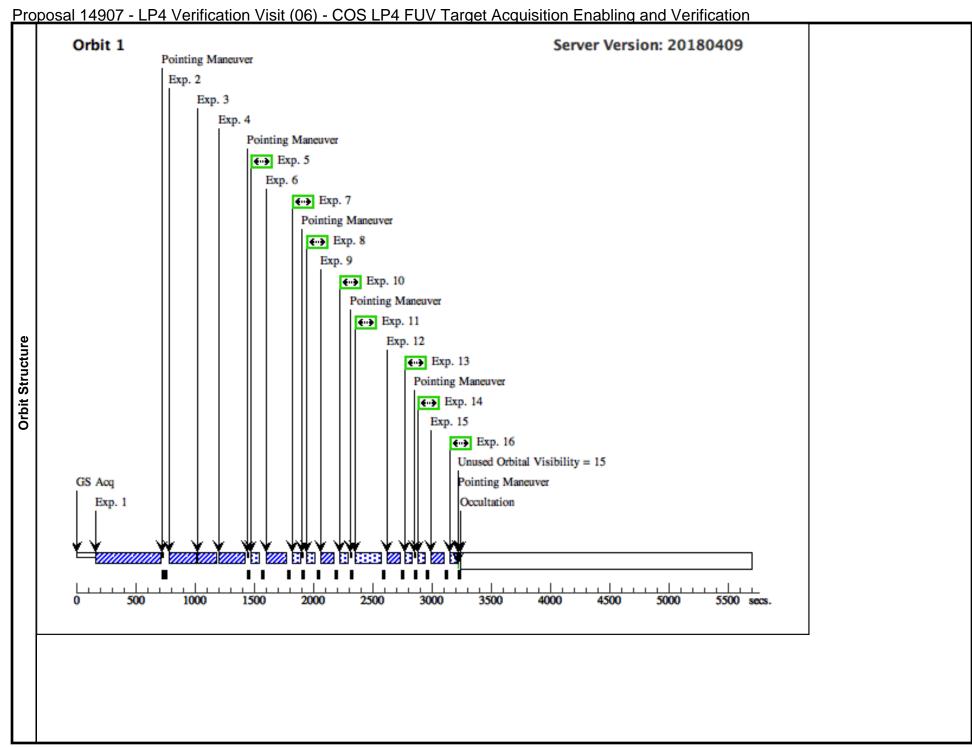
Counts (box of 9 x 9 pixels) Source 23.922 3,609.76 60.08 Background 0.065 9.79 3.13 Sky 8.133e-05 0.01 0.11 Dark Current 0.065 9.78 3.13 Total in selected region 23.987 3,619 Brightest Pixel (single exposure) 3.3 Count rate entire detector 862.791  2 G130M - PE (6) WD1657+34 AKXD - N3 DEF - 1291 (COS.sa.906 478)  Comments: Test LP4 PEAKXD from 3 G130M - PE (6) WD1657+34 AKXD - N5 DEF - 1291 (COS.sa.906 478)  Comments: Test LP4 PEAKXD from 4 G130M - PE (6) WD1657+34 AKXD - N7 DEF - 1291 (COS.sa.906 478)  Comments: Test LP4 PEAKXD from 5 G130M - O (63) WD1657+3 FFSET SPE OFFSET-XD+0.	9.55 60.16 221 501.16 3 COS/FUV, ACQ/PEAKXD, PSA 4 a centered start. COS.sa.906478. SNR= 4 4 a centered start. COS.sa.906478. SNR= 4	G130M 1291 A 40 gives: Time = 0. G130M 1291 A	LIFETIME-POS=LI 4  4 seconds. NUM_POS= NUM-POS=5; LIFETIME-POS=L P4	P 3, STEP_SIZE=DEF		2 Secs (2 Secs)  [==>]  2 Secs (2 Secs)  [==>]  2 Secs (2 Secs)  [==>]	[1]
MAGE (COS.ta.616 985)  Comments: NUV ACQ/IMAGE with  Counts (box of 9 x 9 pixels) Source 23.922 3,609.76 60.08 Background 0.065 9.79 3.13 Sky 8.133e-05 0.01 0.11 Dark Current 0.065 9.78 3.13 Total in selected region 23.987 3,61: Brightest Pixel (single exposure) 3.3 Count rate entire detector 862.791  2 G130M - PE (6) WD1657+34 AKXD - N3 DEF - 1291 (COS.sa.906 478)  Comments: Test LP4 PEAKXD from 4 G130M - PE (6) WD1657+34 AKXD - N5 DEF - 1291 (COS.sa.906 478)  Comments: Test LP4 PEAKXD from 4 G130M - PE (6) WD1657+34 AKXD - N7 DEF - 1291 (COS.sa.906 478)  Comments: Test LP4 PEAKXD from 5 G130M - O (63) WD1657+3 FFSET SPE OFFSET-XD+0. CTRUM + 0	9.55 60.16 121 501.16 13 COS/FUV, ACQ/PEAKXD, PSA 14 a centered start. COS.sa.906478. SNR= 4 13 COS/FUV, ACQ/PEAKXD, PSA 14 a centered start. COS.sa.906478. SNR= 4	G130M 1291 A 40 gives: Time = 0. G130M 1291 A	LIFETIME-POS=LI 4  4 seconds. NUM_POS= NUM-POS=5; LIFETIME-POS=L P4	P 3, STEP_SIZE=DEF		2 Secs (2 Secs) [==>]  2 Secs (2 Secs)	
Counts (box of 9 x 9 pixels) Source 23.922 3,609.76 60.08 Background 0.065 9.79 3.13 Sky 8.133e-05 0.01 0.11 Dark Current 0.065 9.78 3.13 Total in selected region 23.987 3,619 Brightest Pixel (single exposure) 3.3 Count rate entire detector 862.791  2 G130M - PE (6) WD1657+34 AKXD - N3 DEF - 1291 (COS.sa.906 478)  Comments: Test LP4 PEAKXD from 4 G130M - PE (6) WD1657+34 AKXD - N5 DEF - 1291 (COS.sa.906 478)  Comments: Test LP4 PEAKXD from 4 G130M - PE (6) WD1657+34 AKXD - N7 DEF - 1291 (COS.sa.906 478)  Comments: Test LP4 PEAKXD from 5 G130M - O (63) WD1657+3 FFSET SPE OFFSET-XD+0. CTRUM + 0	9.55 60.16 121 501.16 13 COS/FUV, ACQ/PEAKXD, PSA 14 a centered start. COS.sa.906478. SNR= 4 13 COS/FUV, ACQ/PEAKXD, PSA 14 a centered start. COS.sa.906478. SNR= 4	G130M 1291 A 40 gives: Time = 0. G130M 1291 A	LIFETIME-POS=LI 4  4 seconds. NUM_POS= NUM-POS=5; LIFETIME-POS=L P4	P 3, STEP_SIZE=DEF		[==>] 2 Secs (2 Secs)	[1]
Source 23.922 3,609.76 60.08 Background 0.065 9.79 3.13 Sky 8.133e-05 0.01 0.11 Dark Current 0.065 9.78 3.13 Total in selected region 23.987 3,619 Brightest Pixel (single exposure) 3.3 Count rate entire detector 862.791  2 G130M - PE (6) WD1657+34 AKXD - N3 DEF - 1291 (COS.sa.906 478)  Comments: Test LP4 PEAKXD from  3 G130M - PE (6) WD1657+34 AKXD - N5 DEF - 1291 (COS.sa.906 478)  Comments: Test LP4 PEAKXD from  4 G130M - PE (6) WD1657+34 AKXD - N7 DEF - 1291 (COS.sa.906 478)  Comments: Test LP4 PEAKXD from  5 G130M - O (63) WD1657+3 FFSET SPE OFFSET-XD+0. CTRUM + 0	221 501.16  3 COS/FUV, ACQ/PEAKXD, PSA  4 a centered start. COS.sa.906478. SNR= 4  3 COS/FUV, ACQ/PEAKXD, PSA  4 a centered start. COS.sa.906478. SNR= 4	1291 A 40 gives: Time = 0. G130M 1291 A	4  4 seconds. NUM_POS=  NUM-POS=5;  LIFETIME-POS=L P4	3, STEP_SIZE=DEF	,	[==>] 2 Secs (2 Secs)	[1]
AKXD - N3 DEF - 1291 (COS.sa.906 478)  Comments: Test LP4 PEAKXD from  3 G130M - PE (6) WD1657+34 AKXD - N5 DEF - 1291 (COS.sa.906 478)  Comments: Test LP4 PEAKXD from  4 G130M - PE (6) WD1657+34 AKXD - N7 DEF - 1291 (COS.sa.906 478)  Comments: Test LP4 PEAKXD from  5 G130M - O (63) WD1657+3 FFSET SPE OFFSET-XD+0. CTRUM + 0	a centered start. COS.sa.906478. SNR= 4 3 COS/FUV, ACQ/PEAKXD, PSA a centered start. COS.sa.906478. SNR= 4	1291 A 40 gives: Time = 0. G130M 1291 A	4  4 seconds. NUM_POS=  NUM-POS=5;  LIFETIME-POS=L P4	3, STEP_SIZE=DEF	,	[==>] 2 Secs (2 Secs)	[1]
DEF - 1291 (COS.sa.906 478)  Comments: Test LP4 PEAKXD from  3 G130M - PE (6) WD1657+34 AKXD - N5 DEF - 1291 (COS.sa.906 478)  Comments: Test LP4 PEAKXD from  4 G130M - PE (6) WD1657+34 AKXD - N7 DEF - 1291 (COS.sa.906 478)  Comments: Test LP4 PEAKXD from  5 G130M - O (63) WD1657+3 FFSET SPE OFFSET-XD+0. CTRUM + 0	3 COS/FUV, ACQ/PEAKXD, PSA a centered start. COS.sa.906478. SNR= 4	40 gives: Time = 0. G130M 1291 A	4 seconds. NUM_POS= NUM-POS=5; LIFETIME-POS=L P4	<del>-</del>	,	2 Secs (2 Secs)	[1]
3 G130M - PE (6) WD1657+34 AKXD - N5 DEF - 1291 (COS.sa.906 478)  Comments: Test LP4 PEAKXD from 4 G130M - PE (6) WD1657+34 AKXD - N7 DEF - 1291 (COS.sa.906 478)  Comments: Test LP4 PEAKXD from 5 G130M - O (63) WD1657+3 FFSET SPE OFFSET-XD+0. CTRUM + 0	3 COS/FUV, ACQ/PEAKXD, PSA a centered start. COS.sa.906478. SNR= 4	G130M 1291 A	NUM-POS=5; LIFETIME-POS=L P4	<del>-</del>		, , ,	
AKXD - N5 DEF - 1291 (COS.sa.906 478)  Comments: Test LP4 PEAKXD from 4 G130M - PE (6) WD1657+34 AKXD - N7 DEF - 1291 (COS.sa.906 478)  Comments: Test LP4 PEAKXD from 5 G130M - O (63) WD1657+3 FFSET SPE OFFSET-XD+0. CTRUM + 0	a centered start. COS.sa.906478. SNR= 4	1291 A	LIFETIME-POS=L P4			, , ,	
DEF - 1291 (COS.sa.906 478)  Comments: Test LP4 PEAKXD from 4 G130M - PE (6) WD1657+34 AKXD - N7 DEF - 1291 (COS.sa.906 478)  Comments: Test LP4 PEAKXD from 5 G130M - O (63) WD1657+3 FFSET SPE OFFSET-XD+0. CTRUM + 0			P4			[==>]	
Comments: Test LP4 PEAKXD from  5 G130M - O (63) WD1657+3 FFSET SPE OFFSET-XD+0. CTRUM + 0		40  gives:  Time = 0.	A seconds NIIM POS-				[1]
Comments: Test LP4 PEAKXD from  5 G130M - O (63) WD1657+3 FFSET SPE OFFSET-XD+0. CTRUM + 0	3 COS/FUV. ACO/PEAKXD. PSA		4 seconas. NOM_1 OS=	5, STEP_SIZE=DEF	•		
Comments: Test LP4 PEAKXD from  5 G130M - O (63) WD1657+3 FFSET SPE OFFSET-XD+0. CTRUM + 0		G130M	NUM-POS=7;			2 Secs (2 Secs)	
Comments: Test LP4 PEAKXD from  5 G130M - O (63) WD1657+3 FFSET SPE OFFSET-XD+0. CTRUM + 0		1291 A	LIFETIME-POS=L P4;	•		[==>]	[1]
5 G130M - O (63) WD1657+3 FFSET SPE OFFSET-XD+0. CTRUM + 0			CENTER=FLUX-V T-FLR	V			[1]
FFSET SPE OFFSET-XD+0. CTRUM + 0	a centered start. COS.sa.906478. SNR= 4	40  gives:  Time = 0.	4 seconds. NUM_POS=	7, STEP_SIZE=DEF,	, CENTER=FWF		
CTRUM + 0	43- COS/FUV, TIME-TAG, PSA	G130M	BUFFER-TIME=29	Sequence 5-7 Non- t in LP4 Verificatio Visit (06)	Sequence 5-7 Non-In	22 Secs (22 Secs)	
		1291 A	5;		t in LP4 Verification Visit (06)	[==>]	
.8 (UP)			FP-POS=3; FLASH=YES;		` ,		(1)
(COS.sp.617 166)			LIFETIME-POS=L	,			[1]
Comments: ETC Request ID: COS.s	p.617166, $SNR/RE = 3.000$ at wavelength	1310.00A gives: T		3T=2/3*(441)=295			1
6 G130M - PE (63) WD1657+3	- COS/FUV, ACQ/PEAKXD, PSA	G130M	NUM-POS=5;		Sequence 5-7 Non-In		
AKXD-XD OFFSET-XD+0. +0.8 (UP) (COS.sa.906 478)	.8	1291 A	LIFETIME-POS=L P4	,	t in LP4 Verification Visit (06)	[==>]	[1]
· · · · · · · · · · · · · · · · · · ·	target, see previous comment. COS.sa.90	6478. SNR= 40 giv	ves: Time = 0.4 seconds.	Test N=5 default			-
7 G130M - Co (63) WD1657+3	43- COS/FUV, TIME-TAG, PSA	G130M	BUFFER-TIME=29		Sequence 5-7 Non-In	22 Secs (22 Secs)	
nfirmation OFFSET-XD+0. SPECTRU		1291 A	5; FP-POS=3;	t in LP4 Veri Visit (06)	t in LP4 Verification	[==>]	
M (COS.sp.617			FLASH=YES;				[1]
166)			LIFETIME-POS=L P4	,			[ [1]
Comments: ETC Request ID: COS.sp	n 617166 SN = 3 000 at wavelength 1310	.00A (per resolutio		= 8.6358 seconds		•	1

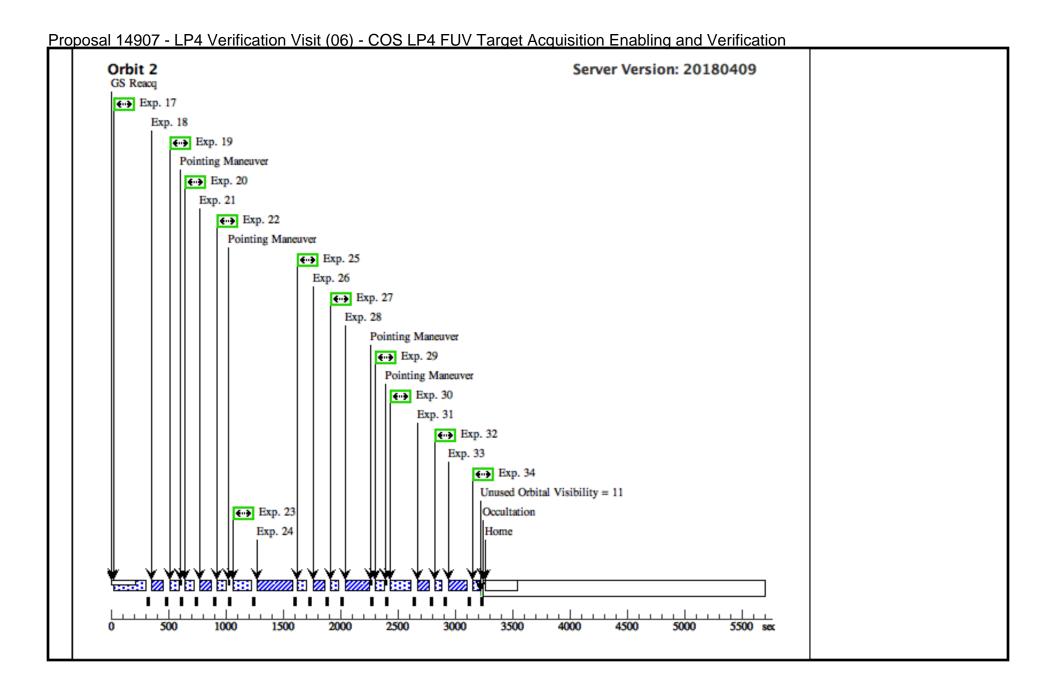
Proposal 14907 - LP4 Verification Visit (06) - COS LP4 FUV Target Acquisition Enabling and Verification G130M - O (6) WD1657+343 COS/FUV. TIME-TAG. PSA G130M BUFFER-TIME=29 Sequence 8-10 Non-I 22 Secs (22 Secs) FFSET SPE 5: nt in LP4 Verificatio 1291 A I = = > 1CTRUM - 0. n Visit (06) FP-POS=3: 8 (DOWN) (COS.sp.617 FLASH=YES: [1] 166) LIFETIME-POS=L Comments: ETC Request ID: COS.sp.617166, SN = 3.000 at wavelength 1310.00A (per resolution element) gives: Time = 8.6358 seconds G130M - PE (6) WD1657+343 COS/FUV, ACO/PEAKXD, PSA NUM-POS=3; Sequence 8-10 Non-I 2 Secs (2 Secs) G130M AKXD-XD nt in LP4 Verificatio 1291 A STEP-SIZE=1.25; I = = > 1+0.8 (DOW n Visit (06) N) LIFETIME-POS=L [1] (COS.sa.906 P4 478) Comments: ACQ/PEAKXD on -0.8" offset target. COS.sa.906478. SNR= 40 gives: Time = 0.4 seconds. Test N=3 STEP\_SIZE non-default size G130M - C (6) WD1657+343 COS/FUV. TIME-TAG. PSA G130M BUFFER-TIME=29 Sequence 8-10 Non-I 22 Secs (22 Secs) **ONFIRMA** nt in LP4 Verificatio 5; 1291 A I = = > 1TION SPEC n Visit (06) FP-POS=3; TRUM FLASH=YES; [1] (COS.sp.617 166) LIFETIME-POS=L Comments: ETC Request ID: COS.sp.617166, SN = 3.000 at wavelength 1310.00A (per resolution element) gives: Time = 8.6358 seconds Sequence 11-13 Non | 7 Secs (7 Secs) G140L - OF (63) WD1657+343- COS/FUV, TIME-TAG, PSA G140L BUFFER-TIME=42 FSET SPEC OFFSET-XD+0.8 -Int in LP4 Verificati 1280 A I = = > 1TRUM + 0. on Visit (06) FP-POS=3: 8 (UP) [1] (COS.sp.617 FLASH=YES 167) Comments: ETC Request ID: COS.sp.617167, SNR = 3.000 at wavelength 1310A (per resolution element) gives: Time = 1.5274 seconds, BT = 2/3\*(641)=427G140L - DE (63) WD1657+343- COS/FUV, ACO/PEAKXD, PSA G140L Sequence 11-13 Non 3 Secs (3 Secs) -Int in LP4 Verificati  $I_{==>1}$ F PEAKXD- OFFSET-XD+0.8 1280 A XD-0.8 (UP on Visit (06) [1] (COS.sa.906 479) Comments: COS.sa.906479. SNR = 40.000 gives: Time = 1.65 s. FULL Defaults. G140L - CO (63) WD1657+343- COS/FUV, TIME-TAG, PSA G140L BUFFER-TIME=42 Sequence 11-13 Non 7 Secs (7 Secs) NFIRMATI OFFSET-XD+0.8 -Int in LP4 Verificati 7; 1280 A I = = > 1ON SPECT on Visit (06) FP-POS=3; RUM [1] (COS.sa.389 FLASH=YES 908) Comments: ETC Request ID: COS.sp.617166, SN = 3.000 at wavelength 1310.00A (per resolution element) gives: Time = 8.6358 seconds G140L - OF (6) WD1657+343 COS/FUV, TIME-TAG, PSA G140L BUFFER-TIME=42 Sequence 14-16 Non 7 Secs (7 Secs) FSET SPEC -Int in LP4 Verificati 7: 1280 A I = = > 1TRUM - 0.8 on Visit (06) FP-POS=3: (DOWN) [1] (COS.sp.617 FLASH=YES Comments: ETC Request ID: COS.sp.617167, SNR = 3.000 at wavelength 1310A (per resolution element) gives: Time = 1.5274 seconds, BT = 2/3\*(641)=427 15 G140L - NP (6) WD1657+343 COS/FUV, ACO/PEAKXD, PSA G140L NUM-POS=3 Sequence 14-16 Non 3 Secs (3 Secs) -Int in LP4 Verificati =3 PEAKX 1280 A I = = > 1D-XD-0.8 ( on Visit (06) DOWN) [1] (COS.sa.906 Comments: COS.sa.906479. SNR = 40 gives: Time = 1.65 s. STEP SIZE default with N=3

Proposal 14907 - LP4 Verification Visit (06) - COS LP4 FUV Target Acquisition Enabling and Verification G140L - CO (6) WD1657+343 COS/FUV, TIME-TAG, PSA G140L BUFFER-TIME=42 Sequence 14-16 Non 7 Secs (7 Secs) NFIRMATI 7: -Int in LP4 Verificati 1280 A I ==> 1ON SPECT on Visit (06) FP-POS=3: RUM [1] (COS.sp.617 FLASH=YES 167) Comments: ETC Request ID: COS.sp.617167, SNR = 3.000 at wavelength 1310A (per resolution element) gives: Time = 1.5274 seconds, BT = 2/3\*(641)=427G160M - O (63) WD1657+343- COS/FUV, TIME-TAG, PSA G160M BUFFER-TIME=80 Sequence 17-19 Non 30 Secs (30 Secs) FFSET SPE OFFSET-XD+0.8 -Int in LP4 Verificati 1600 A I==>1CTRUM + 0on Visit (06) FP-POS=3; .8 (UP) [2] (COS.sp.906 FLASH=YES Comments: Check spectrum location, COS.sp, 906482, SNR/RE = 3 at wavelength 1620A gives; Time = 49.9 seconds, BT = 2/3 \* 1463 ~ 975, go with 800s. We only have time for 23s, but that is good enough (COS.sp. G160M - PE (63) WD1657+343- COS/FUV, ACO/PEAKXD, PSA G160M Sequence 17-19 Non 2 Secs (2 Secs) -Int in LP4 Verificati AKXD-XD OFFSET-XD+0.8 I==>11600 A on Visit (06) +0.8 (UP) [2] (COS.sa.906 480) Comments: COS.sa.906480, SNR = 40 gives: Time = 1.05 seconds Time Required for Requested SNR in Segment A only: 5.8063 Time Required for Requested SNR in Segment B only: 1.2852 G160M - C (63) WD1657+343- COS/FUV, TIME-TAG, PSA G160M BUFFER-TIME=80 Sequence 17-19 Non 30 Secs (30 Secs) -Int in LP4 Verificati ONFIRMA OFFSET-XD+0.8 1600 A I = = > 1TION SPEC on Visit (06) FP-POS=3; TRUM [2] (COS.sp.906 FLASH=YES 482) Comments: Check spectrum location. COS.sp.906482, SNR/RE = 3 at wavelength 1620A gives: Time = 49.9 seconds. BT = 2/3 \* 1463 ~ 975. go with 800s Sequence 20-22 Non 30 Secs (30 Secs) G160M - O (6) WD1657+343 BUFFER-TIME=80 COS/FUV, TIME-TAG, PSA G160M -Int in LP4 Verificati FFSET SPE 0; 1600 A [==>1 CTRUM -0. on Visit (06) FP-POS=3; 8 (DOWN) [2] (COS.sp.906 FLASH=YES Comments: Check spectrum location. COS.sp.906482, SNR/RE = 3 at wavelength 1620A gives: Time = 49.9 seconds. BT = 2/3 \* 1463 ~ 975. go with 800s G160M - PE (6) WD1657+343 COS/FUV, ACO/PEAKXD, PSA G160M NUM-POS=3 Sequence 20-22 Non 2 Secs (2 Secs) AKXD-XD--Int in LP4 Verificati 1600 A I ==> 10.8 (DOWN on Visit (06) [2] (COS.sa.906 480) Comments: COS.sa.906480, SNR = 40 gives: Time = 1.05 seconds Time Required for Requested SNR in Segment A only: 5.8063 Time Required for Requested SNR in Segment B only: 1.2852 22 G160M - C (6) WD1657+343 COS/FUV. TIME-TAG. PSA G160M BUFFER-TIME=80 Sequence 20-22 Non 30 Secs (30 Secs) -Int in LP4 Verificati ONFIRMA 0; 1600 A I = = > 1TION SPEC on Visit (06) FP-POS=3; TRUM [2] FLASH=YES (COS.sp.906 Comments: Check spectrum location. COS.sp.906482, SNR/RE = 3 at wavelength 1620A gives: Time = 49.9 seconds. BT = 2/3 \* 1463 ~ 975. go with 800s

Proposal 14907 - LP4 Verification Visit (06) - COS LP4 FUV Target Acquisition Enabling and Verification G160M - O (61) WD1657+343- COS/FUV, TIME-TAG, PSA G160M BUFFER-TIME=80 Sequence 23-29 Non 30 Secs (30 Secs) -Int in LP4 Verificati FFSET SPE OFFSET-1AD-1XD-0: 1577 A I==>1CTRUM [A 1.4AS on Visit (06) FP-POS=3: D,XD]=[1,1][2] FLASH=YES (COS.sp.907 019) Comments: Check Initial pectrum location, offset in [AD,XD] by [+1,+1], so target should go DOWN and towards longer wavelengths (LEFT in detector coordinates, RIGHT in USER). COS.sp.907019, SNR/RE = 3 at wavelength 1600A gives: Time = 42 seconds. BT = 2/3 \* 1275 ~ 850, go with 800s We choose to use the G160M because it has a narrower XD profile, which is easier to measure. G160M - A (61) WD1657+343- COS/FUV, ACQ/SEARCH, PSA G160M CENTER=FLUX-W Sequence 23-29 Non 2 Secs (2 Secs) -Int in LP4 Verificati  $I_{==>1}$ CQ/SEARC OFFSET-1AD-1XD-T-FLR; 1577 A H on OFFS 1.4AS on Visit (06) SCAN-SIZE=3; ET[2] (COS.sa.907 STEP-SIZE=1.765 020)Comments: COS.sa.907020: SNR = 40 gives: Time = 0.9206 seconds Time Required for Requested SNR in Segment A only: 4,9090 Time Required for Requested SNR in Segment B only: 1.1330 G160M - C (61) WD1657+343- COS/FUV, TIME-TAG, PSA G160M BUFFER-TIME=80 Sequence 23-29 Non 30 Secs (30 Secs) ONFIRMA OFFSET-1AD-1XD--Int in LP4 Verificati 1577 A I = = > 1TION SPEC 1.4AS on Visit (06) FP-POS=3; TRUM [2] (COS.sp.907 FLASH=YES 019) Comments: Check spectrum location. COS.sp.907019, SNR/RE = 3 at wavelength 1600A gives: Time = 42 seconds. BT = 2/3 \* 1275 ~ 850. go with 800s G160M - D (61) WD1657+343- COS/FUV, ACO/PEAKXD, PSA Sequence 23-29 Non 2 Secs (2 Secs) G160M EF ACO/PE OFFSET-1AD-1XD--Int in LP4 Verificati 1577 A f = = > 1AKXD on O 1.4AS on Visit (06) FFSET after [2] SEARCH (COS.sa.907 020) Comments: Default PEAKXD. SNR = 40 gives: Time = 0.9206 seconds Time Required for Requested SNR in Segment A only: 4.9090 Time Required for Requested SNR in Segment B only: 1.1330 G160M - C (61) WD1657+343- COS/FUV, TIME-TAG, PSA G160M BUFFER-TIME=80 Sequence 23-29 Non 25 Secs (25 Secs) ONFIRMA OFFSET-1AD-1XD-0: -Int in LP4 Verificati 1577 A I = = > 1TION SPEC 1.4AS on Visit (06) FP-POS=3: TRUM after SEARCH+P FLASH=YES [2] EAKXD (COS.sp.907 019) Comments: Check spectrum location. COS.sp.907019, SNR/RE = 3 at wavelength 1600A gives: Time = 42 seconds. BT = 2/3 \* 1275 ~ 850. go with 800s G160M - A (61) WD1657+343- COS/FUV, ACO/PEAKD, PSA G160M NUM-POS=7: Sequence 23-29 Non 2 Secs (2 Secs) -Int in LP4 Verificati CO/PEAKD OFFSET-1AD-1XD-1577 A STEP-SIZE=0.45 I = = > 1on OFFSET 1.4AS on Visit (06) after PEAK [2] (COS.sa.907 020) Comments: COS.sa.907020: SNR = 40 gives: Time = 0.9206 seconds Time Required for Requested SNR in Segment A only: 4.9090 Time Required for Requested SNR in Segment B only: 1.1330

Proposal 14907 - LP4 Verification Visit (06) - COS LP4 FUV Target Acquisition Enabling and Verification BUFFER-TIME=80 POS TARG 0.333,0 Sequence 23-29 Non G160M - C (61) WD1657+343- COS/FUV, TIME-TAG, PSA G160M 30 Secs (30 Secs) ONFIRMA OFFSET-1AD-1XD--Int in LP4 Verificati 1577 A I = = > 1TION SPEC 1.4AS on Visit (06) FP-POS=3: TRUM after SEARCH+P FLASH=YES [2] EAKXD+P EAKD (COS.sp.907 019) Comments: Check spectrum location. COS.sp.907019, SNR/RE = 3 at wavelength 1600A gives: Time = 42 seconds. BT= 2/3 \* 1275 ~ 850, go with 800s G130M - O (6) WD1657+343 COS/FUV, TIME-TAG, PSA G130M BUFFER-TIME=32 Sequence 30-34 Non 14 Secs (14 Secs) FFSET C12 -Int in LP4 Verificati 4; I==>11291 A 91 SPECTR on Visit (06) FP-POS=3; UM [AD,X D]=[-1,-1]FLASH=YES; [2] (COS.sp.906 LIFETIME-POS=L 475) P4 Comments: Switch to 1291 to test the tallest XD profile cenwave. COS.sp.906475 SNR = 4 at wavelength 1310A (per RE) gives: Time = 16.8 seconds. BT=2/3\*486=324. Note that we previously centered on the [AD XD]=[+1,+1]" target [DOWN,LEFT] in detector coordinates, the target should now be [-1,-1]" [UP,RIGHT] in detector coordinates. G130M - PE (6) WD1657+343 COS/FUV, ACO/PEAKXD, PSA G130M NUM-POS=3; Sequence 30-34 Non 1 Secs (1 Secs) -Int in LP4 Verificati I = > 1AKXD 1291 A STEP-SIZE=1.25; (COS.sa.906 on Visit (06) 477) LIFETIME-POS=L P4; [2] SEGMENT=BOTH; CENTER=FLUX-W Comments: COS.sa.906477 Requested Signal/Noise Ratio = 40 gives: Time = 0.4203 seconds, NO DEFAULTs 32 G130M - C (6) WD1657+343 COS/FUV. TIME-TAG. PSA G130M BUFFER-TIME=32 Sequence 30-34 Non 14 Secs (14 Secs) -Int in LP4 Verificati  $I_{==>1}$ **ONFIRMA** 1291 A TION C129 on Visit (06) FP-POS=3; 1 SPECTRU M after PEA FLASH=YES; [2] KXD LIFETIME-POS=L (COS.sp.906 Comments: COS.sp.906475 SNR = 4 at wavelength 1310A (per RE) gives: Time = 16.8 seconds. BT = 2/3 \* 486 = 324G130M - PE (6) WD1657+343 COS/FUV, ACO/PEAKD, PSA G130M NUM-POS=5; Sequence 30-34 Non 1 Secs (1 Secs) -Int in LP4 Verificati AKD I==>11291 A STEP-SIZE=0.85; (COS.sa.906 on Visit (06) 477) LIFETIME-POS=L [2] SEGMENT=BOTH Comments: COS.sa.906477 Requested Signal/Noise Ratio = 40 gives: Time = 0.4203 seconds G130M - C (6) WD1657+343 COS/FUV, TIME-TAG, PSA G130M BUFFER-TIME=32 Sequence 30-34 Non 14 Secs (14 Secs) ONFIRMA -Int in LP4 Verificati 4: 1291 A I = = > 1TION C129 on Visit (06) FP-POS=3: 1 SPECTRU M AFTER P FLASH=YES: [2] EAKXD+P LIFETIME-POS=L EAKD P4 (COS.sp.906 475) Comments: COS.sp.906475 SNR = 4 at wavelength 1310A (per RE) gives: Time = 16.8 seconds. BT=2/3\*486=324





## Proposal 14907 - ACQ/PEAKXD TEST G130M/1327A (07) - COS LP4 FUV Target Acquisition Enabling and Verification

Proposal 14907, ACQ/PEAKXD TEST G130M/1327A (07), implementation

Wed Jun 06 00:00:52 GMT 2018

Diagnostic Status: Warning

Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%; ORIENT 313D TO 317 D; ON HOLD

Comments: ACQ/PEAKXD Test for G130M/1327A (FUVB is OFF, and SEGMENT=A is set for all exposures). Note that this is a repeat of Visit03 testing SEGMENT=A operations at LP4 for 1327A. See the Visit 03 comments for full details. The -0.5" PEAKXD test was removed and replaced w/ basic commanding tests for ACQ/SEARCH & ACQ/PEAKD. See comments on the individual exposures for other details on minor changes from Visit 03.

On Hold Comments: Waiting for HSTMO approval of Visit 07.

(ACQ/PEAKXD TEST G130M/1327A (07)) Warning (Form): For the best data quality, it is strongly recommended that the maximum number of allowed FP-POS positions is used when observing at a given COS CENWAVE setting. See full description for details.

(ACQ/PEAKXD TEST G130M/1327A (07)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(ACQ/PEAKXD TEST G130M/1327A (07)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(G130M - PEAKXD - Centered (07.007)) Warning (Form): SEGMENT=B is OFF for FUV target acquisition. See full description for details.

(G130M - PEAKXD-XD+0.8 (07.009)) Warning (Form): SEGMENT=B is OFF for FUV target acquisition. See full description for details.

(G130M - PEAKXD-XD-0,8 (07.011)) Warning (Form): SEGMENT=B is OFF for FUV target acquisition. See full description for details.

(G130M -PEAKXD- XD+0.5 (07.013)) Warning (Form): SEGMENT=B is OFF for FUV target acquisition. See full description for details.

(ACQ/SEARCH Commanding Test (07.015)) Warning (Form): SEGMENT=B is OFF for FUV target acquisition. See full description for details.

(ACQ/PEAKD Commanding Test (07.016)) Warning (Form): SEGMENT=B is OFF for FUV target acquisition. See full description for details

## Proposal 14907 - ACQ/PEAKXD TEST G130M/1327A (07) - COS LP4 FUV Target Acquisition Enabling and Verification

#	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									
(3)	AZV18-OFFSET-	Offset from AZV18		V=12.48	Offset Position (AZV18-OFFSET-XD+0.5)				
	XD+0.5	RA Offset: 0.0 Degrees		(B-V)=+0.04					
		Dec Offset: -0.5 Arcsec							
Comment	ts: This target is offset +0	.5" in the XD direction, and is valid for visits 03	R-05 only. The roll angle is 315 +/- 1 degree and is ve	alid for August, 2017. Thes	e will change if these visits are not executed then.				
DELTA_RAD_UNITS STRING DELTA_RA_UNITS STRING DELTA_DEC_UNITS STRING ORIENT FLOAT 31: AD_OFFSET FLOAT		Arcseconds of Time'							
(5)	AZV18-OFFSET-	Offset from AZV18		V=12.48	Offset Position (AZV18-OFFSET-XD+0.8)				
	XD+0.8	RA Offset: 0.0 Degrees		(B-V)=+0.04					
		Dec Offset: -0.8 Arcsec		• •					
Comments: This target is offset +0.8" in the XD direction, and is valid for visits 03-05 only. A +0.8" offset is designed to move the target UP on the COS detector by 0.8" (about 8-9 rows). The roll angle is 315 +/- degree and is valid for August, 2017. These will change if these visits are not executed then.  DELTA_RAD DOUBLE 1.8612883e-11  DELTA_DEC DOUBLE 6.7006377e-08  DELTA_DEC DOUBLE 0.29055060  DELTA_RAD_UNITS STRING 'Degrees'  DELTA_RA_UNITS STRING 'Arcseconds of Time'  DELTA_DEC_UNITS STRING 'Arcseconds'  ORIENT FLOAT 315.000  AD_OFFSET FLOAT 0.00000  XD_OFFSET FLOAT 0.00000  Category=STAR  Description=[B0-B2 III-1]  Extended=NO									

Proposal 14907 - ACQ/PEAKXD TEST G130M/1327A (07) - COS LP4 FUV Target Acquisition Enabling and Verification

10	#	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 (1) AZV	(1) AZV18	COS/NUV, ACQ/IMAGE, BOA	MIRRORA		GS ACQ SCENARI	-	36 Secs (36 Secs)		
		(COS.ta.904 984)					O BASE1B3		[==>]	[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 36s just be to s ure. The previous ACQ/IMAGEs in 13636 gave a S/N of 62.6 is 31 seconds (after background subtraction)									
	2	G130M - B	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M	BUFFER-TIME=50		Sequence 2-8 Non-In	35 Secs (35 Secs)		
		ASELINE S PECTRUM			1327 A	0; FP-POS=3;		t in ACQ/PEAKXD TEST G130M/1327	[==>]		
		(COS.sp.101 4994)				FLASH=S0200D03		A (07)			
		.,,				0;				[1]	
						LIFETIME-POS=L P4:					
					SEGMENT=A						
	ment Cour Co	t). BT=2/3 * 9 nt rate entire o ount rate Segn		e correct location of star when it is cer onfirms FUVA plate scale with a 2nd C		CQ/IMAGE. COS.sp.10a	14994 Exposure time (.	seconds) = 35 at wavel	ength 1400A gives: SNR = 4.3 (per res	solution ele	
	3	G130M - P	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1327 A	BUFFER-TIME=12	POS TARG 0,-1.6	Sequence 2-8 Non-In t in ACQ/PEAKXD TEST G130M/1327	124 Secs (124 Secs)		
		OSTARG + SPECTRU				00; FP-POS=3;			[==>]		
		M1 (-1.6) (COS.sp.101			FLASH=YES:		A (07)				
res		4994)				LIFETIME-POS=L				[1]	
ns.						P4;					
Exposures	_	D 0.00				SEGMENT=A	25//10 0 50 120				
ш				1.6. The vignetting here is /3%. To m CH and ACQ/PEAKD commanding tes					ne retention of the +0.5" test (the -0.5"	test has be	
	4	G130M - P	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M	BUFFER-TIME=65	POS TARG 0,-0.8	Sequence 2-8 Non-In	45 Secs (45 Secs)		
		OSTARG + SPECTRU			1327 A	0; FP-POS=3;		t in ACQ/PEAKXD TEST G130M/1327	[==>]		
		M2 (-0.8) (COS.sp.101				FF-POS=5; FLASH=YES;		A (07)			
		4994)				LIFETIME-POS=L				[1]	
						P4;					
						SEGMENT=A					
P	Com	Comments: POSTARG TO Move to Y=-0.8. The vignetting here is 23%, so to match the 35s in 03.002, we need 34*1.3 = 45s. Due to the ~4x lower count rate, the buffer time has been increased for efficiency.  5 G130M - P (1) AZV18 COS/FUV, TIME-TAG, PSA G130M BUFFER-TIME=65 POS TARG 0.0.8 Sequence 2-8 Non-In 45 Secs (45 Secs)									
	5	5 G130M - P (1) AZV18 OSTARG +	(1) AZV18	COS/FUV, TIME-TAG, PSA	G130M 1327 A	BUFFER-TIME=65 0;	POS TARG 0,0.8	t in ACQ/PEAKXD	[==>]		
		SPECTRU M3 (+0.8)			1327 A	FP-POS=3;		TEST G130M/1327 A (07)	[>]		
		(COS.sp.101				FLASH=YES;		11(07)		[1]	
		4994)				LIFETIME-POS=L				[1]	
						P4; SEGMENT=A					
	Com	ıments: same i	us 07.004 but at +0.8'	11		SEGMENT-A					
	com	same t	07.007 0111 41 10.0								

Proposal 14907 - ACQ/PEAKXD TEST G130M/1327A (07) - COS LP4 FUV Target Acquisition Enabling and Verification G130M - P (1) AZV18 COS/FUV, TIME-TAG, PSA G130M BUFFER-TIME=12 POS TARG 0,1.6 Sequence 2-8 Non-In 124 Secs (124 Secs) OSTARG+ t in ACO/PEAKXD 1327 A I = = > 1**SPECTRU** TEST G130M/1327 FP-POS=3: M4 (+1.6)A(07)(COS.sp.101 FLASH=YES: [1] 4994) LIFETIME-POS=L SEGMENT=A Comments: same as 0.7.003 bat at +1.6" (towards LP3) LIFETIME-POS=LP G130M - PE (1) AZV18 COS/FUV, ACQ/PEAKXD, PSA G130M Sequence 2-8 Non-In 2 Secs (2 Secs) AKXD - Ce t in ACQ/PEAKXD 1327 A [==>1 TEST G130M/1327 ntered SEGMENT=A; (COS.sa.101 A (07) [1] 4996) NUM-POS=5; STEP-SIZE=0.8 Comments: Requested Signal/Noise Ratio = 40.000 for Segment A and Segment B combined gives: Time = 0.7941 seconds Time Required for Requested SNR in Segment A only: 1.2165 Time Required for Requested SNR in Segment B only: 2.2875 Sequence 2-8 Non-In 35 Secs (35 Secs) G130M - Co (1) AZV18 COS/FUV, TIME-TAG, PSA G130M BUFFER-TIME=50 nfirmation S t in ACQ/PEAKXD 1327 A [==>1 PECTRUM TEST G130M/1327 FP-POS=3; (COS.sp.101 A(07)4994) FLASH=YES: [1] LIFETIME-POS=L SEGMENT=A Comments: Spectrum of source to test previous ACO/PEAKXD centering. see 07.002 for details G130M - PE (5) AZV18-OFFSET COS/FUV, ACQ/PEAKXD, PSA G130M LIFETIME-POS=LP Sequence 9-10 Non-I 2 Secs (2 Secs) AKXD-XD -XD+0.8 nt in ACQ/PEAKXD 1327 A I = = > 1TEST G130M/1327 +0.8SEGMENT=A; (COS.sa.101 A(07)[1] 4996) NUM-POS=3; STEP-SIZE=1.3 Comments: ACQ/PEAKXD on the target offset by +0.8". Requested Signal/Noise Ratio = 40.000 for Segment A and Segment B combined gives: Time = 0.7941 seconds Time Required for Requested SNR in Segment A only: 1.2165 Time Required for Requested SNR in Segment B only: 2.2875 G130M - Co (5) AZV18-OFFSET COS/FUV, TIME-TAG, PSA G130M BUFFER-TIME=50 Sequence 9-10 Non-I 35 Secs (35 Secs) nfirmation S -XD+0.8 nt in ACQ/PEAKXD 0; 1327 A PECTRUM TEST G130M/1327 FP-POS=3; (COS.sp.101 A(07)4994) FLASH=YES; [1] LIFETIME-POS=L SEGMENT=A Comments: Spectrum of source to test previous ACQ/PEAKXD centering. see 07.002 for details

Proposal 14907 - ACQ/PEAKXD TEST G130M/1327A (07) - COS LP4 FUV Target Acquisition Enabling and Verification Sequence 11-12 Non 2 Secs (2 Secs) G130M - PE (1) AZV18 COS/FUV, ACO/PEAKXD, PSA G130M LIFETIME-POS=LP AKXD-XD--Int in ACO/PEAKX 1327 A D TEST G130M/132 |I==>J0.8 SEGMENT=A; [1] (COS.sa.101 7A (07) 4996) NUM-POS=3 Comments: Back on original target, -0.8" Requested Signal/Noise Ratio = 40.000 for Segment A and Segment B combined gives: Time = 0.7941 seconds Time Required for Requested SNR in Segment A only: 1.2165 Time Required for Requested SNR in Segment B only: 2.2875 G130M - Co (1) AZV18 COS/FUV, TIME-TAG, PSA G130M Sequence 11-12 Non 35 Secs (35 Secs) BUFFER-TIME=50 nfirmation S -Int in ACQ/PEAKX 0:1327 A PECTRUM D TEST G130M/132 FP-POS=3: (COS.sp.101 7A (07) 4994) FLASH=YES; [1] LIFETIME-POS=L P4; SEGMENT=A Comments: Spectrum of source to test previous ACO/PEAKXD centering. see 07.002 for details G130M -PE (3) AZV18-OFFSET COS/FUV, ACQ/PEAKXD, PSA G130M LIFETIME-POS=LP Sequence 13-14 Non | 1 Secs (1 Secs) AKXD-XD -XD+0.5 -Int in ACQ/PEAKX 1327 A I = = > 1D TEST G130M/132 +0.5SEGMENT=A [1] (COS.sa.101 7A (07) 4996) Comments: ACQ/PEAKXD on the target offset by +0.5". (Intentional drop to 1s to test S/N=40) Requested Signal/Noise Ratio = 40.000 for Segment A and Segment B combined gives: Time = 0.7941 seconds Time Required for Requested SNR in Segment A only: 1.2165 Time Required for Requested SNR in Segment B only: 2.2875 G130M - Co (3) AZV18-OFFSET COS/FUV, TIME-TAG, PSA G130M BUFFER-TIME=50 Sequence 13-14 Non 35 Secs (35 Secs) -Int in ACQ/PEAKX [==>] nfirmation S -XD+0.5 0; 1327 A D TEST G130M/132 PECTRUM FP-POS=3; (COS.sp.101 7A (07) 4994) FLASH=YES; [1] LIFETIME-POS=L P4: SEGMENT=A Comments: Spectrum of source to test previous ACQ/PEAKXD centering. see 07.002 for details 15 ACQ/SEAR (1) AZV18 COS/FUV. ACO/SEARCH. PSA G130M SCAN-SIZE=2: 0.3 Secs (0.3 Secs) CH Comma 1327 A SEGMENT=A; [==>] nding Test (COS.sp.101 [1] LIFETIME-POS=L 4994) P4 Comments: The target should start 0.5" offset in XD due to switch in targets from the last PEAKXD ACQ/PEAK (1) AZV18 COS/FUV, ACO/PEAKD, PSA G130M SEGMENT=A; 0.3 Secs (0.3 Secs) D Command 1327 A LIFETIME-POS=L I ==> 1ing Test (COS.sp.101 [1] 4994) NUM-POS=3; STEP-SIZE=1.1

