

14842 - Quick-check of the G130M Spectral Resolution at Lifetime Position 4

Cycle: 23, Proposal Category: CAL/COS (Availability Mode: RESTRICTED)

INVESTIGATORS

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VISITS

Visit	Targets used in Visit	Configurations used in Visit	Orbits Used		OP Current with Visit?
	(3) AV75 DARK NONE	COS COS/FUV COS/NUV S/C	3	07-Sep-2016 19:13:24.0	yes

3 Total Orbits Used

ABSTRACT

Following its change of lifetime position, the core of the LSFs of the COS FUV detector are expected to change by up to 10% once combined with the LSFs of the OTA+MFWE combination. The knowledge of the COS LSFs is critical for users to evaluate the feasibility and S/N requirements of their observations. In addition, accurate COS LSFs are necessary to perform line profile fitting. Thus, it appears necessary to constrain the shape of the COS LSFs at the new lifetime position. To do so, we will acquire COS FUV G130M spectra of the SMC star AzV 75, at the two extreme

Proposal 14842 (STScI Edit Number: 3, Created: Wednesday, September 7, 2016 6:13:26 PM EST) - Overview

CENWAVES and using all FPPOS to optimize the S/N. Once all FPPOS settings are combined, our observations will reach a S/N of 60/resel. We will test whether previous STIS E140M spectra of AzV 75 convolved with model COS LSFs at LP4 can reproduce on-orbit observed COS FUV spectra of the numerous ISM lines toward AzV 75 at LP4. While we will not be able to detect a 10% change in the core of the COS LSFS, we will rather be able to test the validity of the model LSFs at the new position. In addition, we will be able to detect a 15% uniform change across the LSFs, and unexpected larger variations in the COS LSFs larger than 15%. Additionally, we will take observations with G130M/1327 FP-POS 2 and 3 at 2 cross-dispersion positions (XD=-4.5 arcsec and XD=-6.0 arcsec from LP1) encompassing the LP4 location to support efforts to characterize the geometric distortions below LP4. The HV values will be adjusted to those selected for start of operations at LP4. We will use HV values of 163/163 (A/B) for all exposures.

OBSERVING DESCRIPTION

We will acquire COS FUV G130M spectra of the SMC star AzV 75, with the 1291 and 1327 cenwaves and using all FPPOS to optimize the S/N. Once all FPPOS settings are combined, our observations will reach a S/N of 60/resel. We will perform a NUV imaging target acquisition with the BOA.

Additionally, we will take observations with G130M/1327 FP-POS 2 and 3 at 2 cross-dispersion positions (XD=-4.5 arcsec and XD=-6.0 arcsec from LP1) encompassing the LP4 location to support efforts to characterize the geometric distortion correction below LP4. The HV values will be adjusted to those selected for start of operations at LP4. We will use HV values of 163/163 (A/B) for all exposures.

We request that the data be fast tracked once the program has executed. The program needs to be executed before September 6, 2016 to maintain LP4 move schedule.

		ILUT - QUICK-CHECK OF THE GT30				
	Proposal 14842, Visit 01, in	nplementation			Wed Sep 07 23:13:26 GMT 2	2016
Visit	Diagnostic Status: Warning	g				
5	Scientific Instruments: COS,	, S/C, COS/FUV, COS/NUV				
	Special Requirements: SCHE	ED 100%; ORIENT 280D TO 60 D; ORIENT 1601	D TO 165 D; BEFORE 06-SEP-2016:00:00:00			
	(Visit 01) Warning (Orbit Pla	anner): POS TARG OUTSIDE OF APERTURE				
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stics	(Visit 01) Warning (Orbit Pla	anner): POS TARG OUTSIDE OF APERTURE				
2	(Visit 01) Warning (Orbit Pla	anner): POS TARG OUTSIDE OF APERTURE				
ag	(Visit 01) Warning (Orbit Pla	anner): INEFFICIENT ORDERING OF FP-POS P	OSITIONS			
Ξ	(Visit 01) Warning (Orbit Pla	anner): POS TARG OUTSIDE OF APERTURE				
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rgets	# Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	
- B	(3) AV75	RA: 00 50 32.3900 (12.6349583d)		V=12.79	Reference Frame: ICRS	
Tar		Dec: -72 52 36.48 (-72.87680d)				
5		Equinox: J2000				
Fixe	Comments: This object was g	generated by the targetselector and retrieved from t	he SIMBAD database.			
Ē	Extended=NO					

	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	nuv_boa_mi	(3) AV75	COS/NUV, ACQ/SEARCH, BOA	MIRRORA	STEP-SIZE=1.767;			7 Secs (7 Secs)	
	ra_acq_sear ch				SCAN-SIZE=2;			[==>]	
	(COS.ta.675 262)				CENTER=FLUX-W T	V			[1]
2	image_acq_	(3) AV75	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				14 Secs (14 Secs)	
	boa (COS.ta.640 604)							[==>]	[1]
3	1291_initiali	(3) AV75	COS/FUV, TIME-TAG, PSA	G130M	BUFFER-TIME=10			0.1 Secs (0.1 Secs)	
	ze_aperture- position-foc			1291 A	0;			[==>]	
	us-HV-value				FP-POS=1;				[1]
	s (COS.sp.828 937)				FLASH=NO; WAVECAL=NO				
	nments: initiali. 7 & 14525.	zes the G130M/12	91 observations to set aperture position,	HV value and focus	s values to LP3 defaults b	before we move to ap	eture and change H	V and focus values relevant for LP4 and der	ived from
4	Move Apert	NONE	COS, ALIGN/APER		XAPER=53;			0.0 Secs (0 Secs)	
	ure to -5 arc sec from LP 1				YAPER=0.0			[==>]	[1]
Con	nments: Using	-21 motor steps pe	r arcsec. The aperture is moved from L	P3 cross-dispersion	n position (XD =-2.5") to	position (XD=-5.0")	by -2.52"		
5	adjust HV to	DARK	S/C, DATA, NONE			SAA CONTOUR	31;	39 Secs (39 Secs)	
	163/163 (A/ B) for 1291					SPEC COM INST ELHVADJPROP;	R	[==>]	
						QESIPARM END TSA 163;	C		[1]
						QESIPARM END TSB 163	2		
Base Expo For For	ed on 14525: v	alculated from: 39 67)= -4 steps 69)= -6 steps	167/169 (A/B) - /= 163/163 (A/B) for 1291 and 1327. 9 seconds + ceiling (XX*1.1) where XX (s step difference (in	n HV steps) if the HV is so	et higher than where	we started.		
			tion: ELHVADJPROP and special observ V values previously set by special comma					ive.	
6	Adjust focus	NONE	COS, ALIGN/OSM		FOCUS=40			0.0 Secs (0 Secs)	
	value for 12 91 LP4							[==>]	[1]
	nments: Adjuste	ed focus to the esti	mate obtained from P14527 analysis.						
Con		(3) AV75	COS/FUV, TIME-TAG, PSA	G130M	BUFFER-TIME=10		5	200 Secs (200 Secs)	
Con 7	1291_FP1			1291 A	0,	2		[==>]	
<u>Con</u> 7	(COS.sp.828				FP-POS=1;				
<u>Con</u> 7	1291_FP1 (COS.sp.828 937)				FLASH=S0055D03				[1]
7 Con	(COS.sp.828 937) mments: adjuste	ed target position i	n aperture by setting a POS TARG to nding to YAPER=53 steps)		FLASH=S0055D03				[1]
7 Con	(COS.sp.828 937) mments: adjuste	ed target position i	n aperture by setting a POS TARG to nding to YAPER=53 steps)		FLASH=S0055D03				[1]

8 1291_FP2 (3) AV75	COS/FUV, TIME-TAG, PSA	G130M	BUFFER-TIME=10	SAME POS AS 7	200 Secs (200 Secs)	
(COS.sp.828 937)		1291 A	0; FP-POS=2; FLASH=S0055D03 0		[==>]	[1]
Comments: Adjusted target in ape	rture by setting POS TARG value to: Sam	e as 1291_FP1				
9 1291_FP3 (3) AV75	COS/FUV, TIME-TAG, PSA	G130M	BUFFER-TIME=10	SAME POS AS 7	200 Secs (200 Secs)	
(COS.sp.828 937)		1291 A	0; FP-POS=3; FLASH=S0055D03 0		[==>]	[1]
	rture by setting POS TARG value to: Sam	e as 1291_FP1				
10 1291_FP4 (3) AV75 (COS.sp.828	COS/FUV, TIME-TAG, PSA	G130M	BUFFER-TIME=10 0;	SAME POS AS 7	200 Secs (200 Secs)	
937)		1291 A	6, FP-POS=4; FLASH=S0055D03 0		[==>]	[1]
Comments: Adjusted target in ape	rture by setting POS TARG value to: Sam	e as 1291_FP1	-			
11 1327_initiali (3) AV75	COS/FUV, TIME-TAG, PSA	G130M	BUFFER-TIME=10		0.1 Secs (0.1 Secs)	
ze_focus (COS.sp.828 937)		1327 A	0; FP-POS=1; FLASH=NO; WAVECAL=NO	2	[==>]	[1]
Comments: initializes the G130M/	1327 observations. As long as the config (COS/FUV) and ape	erture & LP (PSA, LP3) dor	n't change, the ApMech will not be	e commanded. So we should not need anyth	ing special to m
ntain the ApMech setting when sw	vitching central wavelengths.	COS/FUV) and apo		n't change, the ApMech will not be	-	ing special to m
ntain the ApMech setting when sw 12 Adjust focus NONE value for 13 27 LP4	itching central wavelengths. COS, ALIGN/OSM	COS/FUV) and apo	erture & LP (PSA, LP3) dor FOCUS=40	n't change, the ApMech will not be	e commanded. So we should not need anything 0.0 Secs (0 Secs) [==>]	ing special to m
ntain the ApMech setting when sw 12 Adjust focus NONE value for 13 27 LP4 Comments: Adjusted focus to the e	itching central wavelengths. COS, ALIGN/OSM stimate obtained from P14527 analysis.		FOCUS=40		0.0 Secs (0 Secs) [==>]	
ntain the ApMech setting when sw Adjust focus NONE value for 13 27 LP4 Comments: Adjusted focus to the e 13 1327_FP1 (3) AV75 (COS.sp.828	itching central wavelengths. COS, ALIGN/OSM	G130M			$\frac{0.0 \text{ Secs } (0 \text{ Secs})}{[==>]}$ 200 Secs (200 Secs)	
ntain the ApMech setting when sw Adjust focus NONE value for 13 27 LP4 Comments: Adjusted focus to the e 13 1327 FP1 (3) AV75	itching central wavelengths. COS, ALIGN/OSM stimate obtained from P14527 analysis.		FOCUS=40 BUFFER-TIME=10	POS TARG 0.0,-2.5	0.0 Secs (0 Secs) [==>]	
ntain the ApMech setting when sw 12 Adjust focus NONE value for 13 27 LP4 Comments: Adjusted focus to the e 13 1327_FP1 (3) AV75 (COS.sp.828 938) Comments: Adjusted target in ape	itching central wavelengths. COS, ALIGN/OSM stimate obtained from P14527 analysis.	G130M 1327 A	FOCUS=40 BUFFER-TIME=10 0; FP-POS=1; FLASH=S0055D03	POS TARG 0.0,-2.5	$\frac{0.0 \text{ Secs } (0 \text{ Secs})}{[==>]}$ 200 Secs (200 Secs)	
ntain the ApMech setting when sw 12 Adjust focus NONE value for 13 27 LP4 Comments: Adjusted focus to the e 13 1327_FP1 (3) AV75 (COS.sp.828 938) Comments: Adjusted target in ape 14 1327 FP2 (3) AV75	itching central wavelengths. COS, ALIGN/OSM stimate obtained from P14527 analysis. COS/FUV, TIME-TAG, PSA	G130M 1327 A <u>e as 1291_FP1</u> G130M	FOCUS=40 BUFFER-TIME=10 0; FP-POS=1; FLASH=S0055D03 0 BUFFER-TIME=10	POS TARG 0.0,-2.5	$ \begin{array}{r} 0.0 \text{ Secs } (0 \text{ Secs}) \\ [==>] \end{array} $ $ \begin{array}{r} 200 \text{ Secs } (200 \text{ Secs}) \\ [==>] \end{array} $ $ \begin{array}{r} 200 \text{ Secs } (200 \text{ Secs}) \\ 200 \text{ Secs } (200 \text{ Secs}) \end{array} $	
ntain the ApMech setting when sw 12 Adjust focus NONE value for 13 27 LP4 Comments: Adjusted focus to the e 13 1327_FP1 (3) AV75 (COS.sp.828 938) Comments: Adjusted target in ape	itching central wavelengths. COS, ALIGN/OSM stimate obtained from P14527 analysis. COS/FUV, TIME-TAG, PSA	G130M 1327 A e as 1291_FP1	FOCUS=40 BUFFER-TIME=10 0; FP-POS=1; FLASH=S0055D03 0	POS TARG 0.0,-2.5	$\frac{0.0 \text{ Secs } (0 \text{ Secs})}{[==>]}$ $\frac{200 \text{ Secs } (200 \text{ Secs})}{[==>]}$	
 ntain the ApMech setting when sw Adjust focus NONE value for 13 27 LP4 Comments: Adjusted focus to the e 13 1327_FP1 (3) AV75 (COS.sp.828 938) Comments: Adjusted target in ape 14 1327_FP2 (3) AV75 (COS.sp.828 938) 	itching central wavelengths. COS, ALIGN/OSM stimate obtained from P14527 analysis. COS/FUV, TIME-TAG, PSA	G130M 1327 A <u>e as 1291_FP1</u> G130M 1327 A	FOCUS=40 BUFFER-TIME=10 0; FP-POS=1; FLASH=S0055D03 0 BUFFER-TIME=10 0; FP-POS=2; FLASH=S0055D03	POS TARG 0.0,-2.5	$ \begin{array}{r} 0.0 \text{ Secs } (0 \text{ Secs}) \\ [==>] \end{array} $ $ \begin{array}{r} 200 \text{ Secs } (200 \text{ Secs}) \\ [==>] \end{array} $ $ \begin{array}{r} 200 \text{ Secs } (200 \text{ Secs}) \\ 200 \text{ Secs } (200 \text{ Secs}) \end{array} $	
 ntain the ApMech setting when sw Adjust focus NONE value for 13 27 LP4 Comments: Adjusted focus to the e 13 1327_FP1 (3) AV75 (COS.sp.828 938) Comments: Adjusted target in ape 14 1327_FP2 (3) AV75 (COS.sp.828 938) 	itching central wavelengths. COS, ALIGN/OSM stimate obtained from P14527 analysis. COS/FUV, TIME-TAG, PSA rture by setting POS TARG value to: Sam COS/FUV, TIME-TAG, PSA	G130M 1327 A <u>e as 1291_FP1</u> G130M 1327 A	FOCUS=40 BUFFER-TIME=10 0; FP-POS=1; FLASH=S0055D03 0 BUFFER-TIME=10 0; FP-POS=2; FLASH=S0055D03	POS TARG 0.0,-2.5 2 SAME POS AS 13	$ \begin{array}{r} 0.0 \text{ Secs } (0 \text{ Secs}) \\ [==>] \end{array} $ $ \begin{array}{r} 200 \text{ Secs } (200 \text{ Secs}) \\ [==>] \end{array} $ $ \begin{array}{r} 200 \text{ Secs } (200 \text{ Secs}) \\ 200 \text{ Secs } (200 \text{ Secs}) \end{array} $	

16	1327_FP4 (3	3) AV75	COS/FUV, TIME-TAG, PSA	G130M	BUFFER-TIME=10 SAME POS AS 13	200 Secs (200 Secs)	
	(COS.sp.828	,		1327 A	0;	[==>]	
	938)				FP-POS=4;		
					FLASH=S0055D03		
Con	nments: Adjusted t	target in apertu	re by setting POS TARG value to: Sam	e as 1291 FP1	0		
17	Move Apert N		COS, ALIGN/APER	c us 12/1_111	XAPER=74;	0.0 Secs (0 Secs)	
	ure to -6 arc sec from LP				YAPER=0.0	[==>]	
	1						
Con	nments: Using -21	motor steps pe	r arcsec. The aperture is moved from	LP3 cross-dispersi	on position (XD =-2.5") to position (XD =-6.0") by -3.52"		
18	1327_FP4 a (3 nd XD=-6.0	3) AV75	COS/FUV, TIME-TAG, PSA	G130M	BUFFER-TIME=10 POS TARG 0.0,-3.5 0; 2	200 Secs (200 Secs)	
	arcsec			1327 A	6, 2 FP-POS=4:	[==>]	
	(COS.sp.828 939)				FLASH=S0055D03		
					0		
			n aperture by setting a POS TARG to nding to YAPER=74 steps)				
19	Move Apert N		COS, ALIGN/APER		XAPER=42;	0.0 Secs (0 Secs)	
	ure to -4.5 ar csec from L				YAPER=0.0	[==>]	
	P1						
Con	nments: Using -21	1 motor steps pe	r arcsec. The aperture is moved from	LP3 cross-dispersi	on position (XD =-2.5") to position (XD =-4.5") by -2.000"		
20	1327_FP4 a (3	3) AV75	COS/FUV, TIME-TAG, PSA	G130M	BUFFER-TIME=10 POS TARG 0.0,-2.0	200 Secs (200 Secs)	
	nd XD= -4.5 arcsec			1327 A	0; 00	[==>]	
	(COS.sp.828 939)				FP-POS=4;		
	939)				FLASH=S0055D03 0		
			n aperture by setting a POS TARG to onding to YAPER=42 steps)				
	$0.0 \ ana \ Y = -2.000 \ y = -2.000 \ ana \ Y = -2.000 \ ana \ Y = -2.000 \ y$	arcsec (corresp					
	1327 FP1 a (3			G130M	BUFFER-TIME=10 SAME POS AS 20	200 Secs (200 Secs)	
<u>x=c</u> 21	1327_FP1 a (3 nd XD=-4.5		COS/FUV, TIME-TAG, PSA	G130M 1327 A	BUFFER-TIME=10 SAME POS AS 20 0;	200 Secs (200 Secs)	
	nd XD=-4.5 arcsec			G130M 1327 A		$\frac{200 \text{ Secs } (200 \text{ Secs})}{[==>]}$	
	nd XD=-4.5				0; FP-POS=1; FLASH=S0055D03	/	
21	nd XD=-4.5 arcsec (COS.sp.828 939)	3) AV75	COS/FUV, TIME-TAG, PSA	1327 A	0; FP-POS=1;	/	
21	nd XD=-4.5 arcsec (COS.sp.828 939) mments: Adjusted t	3) AV75 target in apertu		1327 A	0; FP-POS=1; FLASH=S0055D03	[==>]	
21 <i>Con</i>	nd XD=-4.5 arcsec (COS.sp.828 939) mments: Adjusted t Move Apert No ure to -5 arc	3) AV75 target in apertu	COS/FUV, TIME-TAG, PSA	1327 A	0; FP-POS=1; FLASH=S0055D03 0	[==>]	
21 <i>Con</i>	nd XD=-4.5 arcsec (COS.sp.828 939) mments: Adjusted t Move Apert N	3) AV75 target in apertu	COS/FUV, TIME-TAG, PSA	1327 A	0; FP-POS=1; FLASH=S0055D03 0 XAPER=53;	[==>]	
21 <u>Con</u> 22	nd XD=-4.5 arcsec (COS.sp.828 939) mments: Adjusted t Move Apert Nu ure to -5 arc sec from LP 1	3) AV75 target in apertua IONE	COS/FUV, TIME-TAG, PSA re by setting POS TARG value to: Sam COS, ALIGN/APER	1327 A e as 1327_FP4	0; FP-POS=1; FLASH=S0055D03 0 XAPER=53;	[==>]	
21 <u>Con</u> 22	nd XD=-4.5 arcsec (COS.sp.828 939) mments: Adjusted t Move Apert Nu ure to -5 arc sec from LP 1 mments: Using -21 1327 FP1 a (3	3) AV75 target in apertua IONE	COS/FUV, TIME-TAG, PSA re by setting POS TARG value to: Sam COS, ALIGN/APER	1327 A e as 1327_FP4	0; FP-POS=1; FLASH=S0055D03 0 XAPER=53; YAPER=0.0 <i>on position (XD=-2.5") to position (XD=-5.0") by -2.52 "</i> BUFFER-TIME=10 POS TARG 0.0,-2.5	[==>]	
21 <u>Con</u> 22 Con	nd XD=-4.5 arcsec (COS.sp.828 939) mments: Adjusted t Move Apert No ure to -5 arc sec from LP 1 mments: Using -21 1327_FP1 a (3 nd XD=-5.0 arcsec	3) AV75 target in apertua IONE	COS/FUV, TIME-TAG, PSA re by setting POS TARG value to: Sam COS, ALIGN/APER r arcsec. The aperture is moved from	1327 A e as 1327_FP4 LP3 cross-dispersi	0; FP-POS=1; FLASH=S0055D03 0 XAPER=53; YAPER=0.0 <i>on position (XD=-2.5") to position (XD=-5.0") by -2.52 "</i> BUFFER-TIME=10 POS TARG 0.0,-2.5 0; 2	[==>] $0.0 Secs (0 Secs)$ $[==>]$	
21 <u>Con</u> 22 Con	nd XD=-4.5 arcsec (COS.sp.828 939) mments: Adjusted t Move Apert No ure to -5 arc sec from LP 1 nments: Using -21 1327_FP1 a (3 nd XD=-5.0 arcsec (COS.sp.828	3) AV75 target in apertua IONE	COS/FUV, TIME-TAG, PSA re by setting POS TARG value to: Sam COS, ALIGN/APER r arcsec. The aperture is moved from	1327 A <u>e as 1327_FP4</u> <u>LP3 cross-dispersi</u> G130M	0; FP-POS=1; FLASH=S0055D03 0 XAPER=53; YAPER=0.0 on position (XD=-2.5") to position (XD=-5.0") by -2.52 " BUFFER-TIME=10 POS TARG 0.0,-2.5 0; 2 FP-POS=1;	[==>] $0.0 Secs (0 Secs)$ $[==>]$ $200 Secs (200 Secs)$	
21 <u>Con</u> 22 Con	nd XD=-4.5 arcsec (COS.sp.828 939) mments: Adjusted t Move Apert No ure to -5 arc sec from LP 1 mments: Using -21 1327_FP1 a (3 nd XD=-5.0 arcsec	3) AV75 target in apertua IONE	COS/FUV, TIME-TAG, PSA re by setting POS TARG value to: Sam COS, ALIGN/APER r arcsec. The aperture is moved from	1327 A <u>e as 1327_FP4</u> <u>LP3 cross-dispersi</u> G130M	0; FP-POS=1; FLASH=S0055D03 0 XAPER=53; YAPER=0.0 <i>on position (XD=-2.5") to position (XD=-5.0") by -2.52 "</i> BUFFER-TIME=10 POS TARG 0.0,-2.5 0; 2	[==>] $0.0 Secs (0 Secs)$ $[==>]$ $200 Secs (200 Secs)$	
21 <u>Com</u> 22 <u>Com</u> 23 Com	nd XD=-4.5 arcsec (COS.sp.828 939) mments: Adjusted t Move Apert Nu ure to -5 arc sec from LP 1 1327_FP1 a (3 nd XD=-5.0 arcsec (COS.sp.828 939) mments: adjusted t	3) AV75 target in apertua IONE 1 motor steps pe 3) AV75 target position i	COS/FUV, TIME-TAG, PSA re by setting POS TARG value to: Sam COS, ALIGN/APER r arcsec. The aperture is moved from A COS/FUV, TIME-TAG, PSA n aperture by setting a POS TARG to	1327 A <u>e as 1327_FP4</u> <u>LP3 cross-dispersi</u> G130M	0; FP-POS=1; FLASH=S0055D03 0 XAPER=53; YAPER=0.0 on position (XD=-2.5") to position (XD=-5.0") by -2.52 " BUFFER-TIME=10 POS TARG 0.0,-2.5 0; 2 FP-POS=1;	[==>] $0.0 Secs (0 Secs)$ $[==>]$ $200 Secs (200 Secs)$	
$\frac{Com}{22}$ $\frac{Com}{23}$ $Com}{X=0}$	nd XD=-4.5 arcsec (COS.sp.828 939) <u>mments: Adjusted t</u> Move Apert Nu ure to -5 arc sec from LP 1 <u>1327_FP1 a (3 nd XD=-5.0</u> arcsec (COS.sp.828 939) mments: adjusted to 0.0 and Y=-2.52 an	3) AV75 target in apertua IONE 1 motor steps per 3) AV75 target position in rcsec (correspon	COS/FUV, TIME-TAG, PSA re by setting POS TARG value to: Sam COS, ALIGN/APER r arcsec. The aperture is moved from A COS/FUV, TIME-TAG, PSA n aperture by setting a POS TARG to nding to YAPER=53 steps)	1327 A <u>e as 1327_FP4</u> <u>LP3 cross-dispersi</u> G130M	0; FP-POS=1; FLASH=S0055D03 0 XAPER=53; YAPER=0.0 on position (XD=-2.5") to position (XD=-5.0") by -2.52 " BUFFER-TIME=10 POS TARG 0.0,-2.5 0; 2 FP-POS=1; FLASH=S0055D03 0	[==>] $0.0 Secs (0 Secs)$ $[==>]$ $200 Secs (200 Secs)$ $[==>]$	
21 <u>Com</u> 22 <u>Com</u> 23 Com	nd XD=-4.5 arcsec (COS.sp.828 939) mments: Adjusted t Move Apert Nu ure to -5 arc sec from LP 1 1327_FP1 a (3 nd XD=-5.0 arcsec (COS.sp.828 939) mments: adjusted t	3) AV75 target in apertua IONE 1 motor steps per 3) AV75 target position in rcsec (correspon	COS/FUV, TIME-TAG, PSA re by setting POS TARG value to: Sam COS, ALIGN/APER r arcsec. The aperture is moved from A COS/FUV, TIME-TAG, PSA n aperture by setting a POS TARG to	1327 A <u>e as 1327_FP4</u> <u>LP3 cross-dispersi</u> G130M	0; FP-POS=1; FLASH=S0055D03 0 XAPER=53; YAPER=0.0 on position (XD=-2.5") to position (XD=-5.0") by -2.52 " BUFFER-TIME=10 POS TARG 0.0,-2.5 0; 2 FP-POS=1;	[==>] $0.0 Secs (0 Secs)$ $[==>]$ $200 Secs (200 Secs)$	

25	1327 FP1 a	(3) AV75	COS/FUV, TIME-TAG, PSA	G130M	BUFFER-TIME=10	POS TARG 0.0,-3.5	200 Secs (200 Secs)	
	nd $X\overline{D}$ =-6.0 arcsec (COS.sp.828	(*)*****		1327 A	0; FP-POS=1;	2	[==>]	[
	939)				FLASH=S0055D03 0			
Com X=0.	ments: adjuste .0 and Y=-3.52	d target position i arcsec (correspo	in aperture by setting a POS TARG to onling to YAPER=74 steps)					
	1327_FP2 a nd XD=-6.0		COS/FUV, TIME-TAG, PSA	G130M	BUFFER-TIME=10 0:	SAME POS AS 25	200 Secs (200 Secs)	
	arcsec			1327 A	0, FP-POS=2;		[==>]	
	(COS.sp.828 939)				FLASH=S0055D03			
Сот	ments: Adjuste	d target in apertu	ure by setting POS TARG value to: Sam	ne as 1327_FP1 (0.	°			
27	Move Apert	NONE	COS, ALIGN/APER		XAPER=53;		0.0 Secs (0 Secs)	
	ure to -5 arc sec from LP				YAPER=0.0		[==>]	
Сот	ments: Using -	21 motor steps pe	er arcsec. The aperture is moved from	LP3 cross-dispersi	on position (XD=-2.5") to p	position (XD=-5.0") by -2.52 "		
28	1327_FP2 a	(3) AV75	COS/FUV, TIME-TAG, PSA	G130M		POS TARG 0.0,-2.5	200 Secs (200 Secs)	
	nd XD=-5.0 arcsec			1327 A	0; FP-POS=2;	2	[==>]	
	(COS.sp.828 939)				FLASH=S0055D03			
					0			
G			DOG TARGA		0			
Com X=0.	ments: adjusted .0 and Y=-2.52	d target position i arcsec (correspo	in aperture by setting a POS TARG to onding to YAPER=53 steps)		0			
X=0	0 and Y=-2.52 Move Apert	arcsec (correspo	in aperture by setting a POS TARG to onding to YAPER=53 steps) COS, ALIGN/APER		XAPER=42;		0.0 Secs (0 Secs)	
X=0	.0 and Y=-2.52	arcsec (correspo	onding to YAPER=53 steps)		-		0.0 Secs (0 Secs) [==>]	
<u>X=0.</u> 29 Com	0 and Y=-2.52 Move Apert ure to -4.5 ar csec from L P1 ments: Using -	2 arcsec (correspo NONE 21 motor steps pe	onding to YAPER=53 steps) COS, ALIGN/APER er arcsec. The aperture is moved from .		XAPER=42; YAPER=0.0 on position (XD=-2.5") to p		[==>]	
<u>X=0.</u> 29 Com	0 and Y=-2.52 Move Apert ure to -4.5 ar csec from L P1 <u>ments: Using -</u> 1327_FP2 a	2 arcsec (correspo NONE 21 motor steps pe	onding to YAPER=53 steps) COS, ALIGN/APER	G130M	XAPER=42; YAPER=0.0 on position (XD=-2.5") to p BUFFER-TIME=10	POS TARG 0.0,-2.0 00	[==>] 200 Secs (200 Secs)	
<u>X=0.</u> 29 Com	0 and Y=-2.52 Move Apert ure to -4.5 ar csec from L P1 <u>ments: Using -</u> 1327_FP2 a nd XD=-4.5 arcsec	2 arcsec (correspo NONE 21 motor steps pe	onding to YAPER=53 steps) COS, ALIGN/APER er arcsec. The aperture is moved from .		XAPER=42; YAPER=0.0 on position (XD=-2.5") to p	POS TARG 0.0,-2.0	[==>]	
<u>X=0.</u> 29 Com	0 and Y=-2.52 Move Apert ure to -4.5 ar csec from L P1 ments: Using - 1327_FP2 a nd XD=-4.5	2 arcsec (correspo NONE 21 motor steps pe	onding to YAPER=53 steps) COS, ALIGN/APER er arcsec. The aperture is moved from .	G130M	XAPER=42; YAPER=0.0 on position (XD=-2.5") to p BUFFER-TIME=10 0; FP-POS=2; FLASH=S0055D03	POS TARG 0.0,-2.0	[==>] 200 Secs (200 Secs)	
<u>X=0.</u> 29 <u>Com</u> 30	0 and Y=-2.52 Move Apert ure to -4.5 ar csec from L P1 <u>ments: Using -</u> 1327_FP2 a nd XD=-4.5 arcsec (COS.sp.828 939) ments: adjuste	arcsec (correspo NONE 21 motor steps pe (3) AV75 d target position	onding to YAPER=53 steps) COS, ALIGN/APER er arcsec. The aperture is moved from COS/FUV, TIME-TAG, PSA in aperture by setting a POS TARG to	G130M	XAPER=42; YAPER=0.0 on position (XD=-2.5") to p BUFFER-TIME=10 0; FP-POS=2;	POS TARG 0.0,-2.0	[==>] 200 Secs (200 Secs)	
<u>X=0</u> 29 <u>Com</u> 30	0 and Y=-2.52 Move Apert ure to -4.5 ar csec from L P1 <u>ments: Using -</u> 1327_FP2 a nd XD=-4.5 arcsec (COS.sp.828 939) ments: adjusted 0 and Y=-2.00	arcsec (correspo NONE 21 motor steps pe (3) AV75 d target position to 0 arcsec (corresp	onding to YAPER=53 steps) COS, ALIGN/APER er arcsec. The aperture is moved from COS/FUV, TIME-TAG, PSA in aperture by setting a POS TARG to ponding to YAPER=42 steps)	G130M 1327 A	XAPER=42; YAPER=0.0 on position (XD=-2.5") to p BUFFER-TIME=10 0; FP-POS=2; FLASH=S0055D03 0	POS TARG 0.0,-2.0 00	[==>] 200 Secs (200 Secs) [==>]	
<u>X=0</u> 29 <u>Com</u> 30	0 and Y=-2.52 Move Apert ure to -4.5 ar csec from L P1 ments: Using - 1327_FP2 a nd XD=-4.5 arcsec (COS.sp.828 939) ments: adjuster 0 and Y=-2.00 1327_FP3 a nd XD=-4.5	arcsec (correspo NONE 21 motor steps pe (3) AV75 d target position to 0 arcsec (corresp	onding to YAPER=53 steps) COS, ALIGN/APER er arcsec. The aperture is moved from COS/FUV, TIME-TAG, PSA in aperture by setting a POS TARG to	G130M 1327 A G130M	XAPER=42; YAPER=0.0 on position (XD=-2.5") to p BUFFER-TIME=10 0; FP-POS=2; FLASH=S0055D03 0	POS TARG 0.0,-2.0	[==>] 200 Secs (200 Secs) [==>] 200 Secs (200 Secs)	
<u>X=0</u> 29 <u>Com</u> 30	$\begin{array}{c} 0 \ and \ Y=-2.52 \\ \hline \text{Move Apert} \\ \text{ure to } -4.5 \ \text{ar} \\ \text{csec from L} \\ \text{P1} \\ \hline \underline{ments: \ Using -} \\ 1327_\text{FP2 a} \\ \text{nd } XD=-45 \\ \text{arcsec} \\ (\text{COS.sp.828} \\ 939) \\ \hline \end{array}$ $\begin{array}{c} ments: \ adjuste. \\ 0 \ and \ Y=-2.000 \\ \hline 1327_\text{FP3 a} \\ \text{nd } XD=-45 \\ \text{arcsec} \\ \text{c(COS.sp.828} \\ \text{arcsec} \\ \text{c(COS.sp.828) } \end{array}$	arcsec (correspo NONE 21 motor steps pe (3) AV75 d target position to 0 arcsec (corresp	onding to YAPER=53 steps) COS, ALIGN/APER er arcsec. The aperture is moved from COS/FUV, TIME-TAG, PSA in aperture by setting a POS TARG to ponding to YAPER=42 steps)	G130M 1327 A	XAPER=42; YAPER=0.0 BUFFER-TIME=10 0; FP-POS=2; FLASH=S0055D03 0 BUFFER-TIME=10 0; FP-POS=3;	POS TARG 0.0,-2.0 00 POS TARG 0.0,-2.0	[==>] 200 Secs (200 Secs) [==>]	
<u>X=0</u> 29 <u>Com</u> 30	<u>0 and $Y=-2.52$</u> Move Apert ure to -4.5 ar csec from L P1 <u>ments: Using -</u> 1327_FP2 a nd XD=-45 (COS.sp.828 939) <u>ments: adjustee</u> <u>0 and $Y=-2.00$</u> 1327_FP3 a nd XD=-45 arcsec	arcsec (correspo NONE 21 motor steps pe (3) AV75 d target position to 0 arcsec (corresp	onding to YAPER=53 steps) COS, ALIGN/APER er arcsec. The aperture is moved from COS/FUV, TIME-TAG, PSA in aperture by setting a POS TARG to ponding to YAPER=42 steps)	G130M 1327 A G130M	XAPER=42; YAPER=0.0 on position (XD=-2.5") to p BUFFER-TIME=10 0; FP-POS=2; FLASH=S0055D03 0 BUFFER-TIME=10 0;	POS TARG 0.0,-2.0 00 POS TARG 0.0,-2.0	[==>] 200 Secs (200 Secs) [==>] 200 Secs (200 Secs)	
$\frac{X=0}{29}$ $\frac{Com}{30}$ $\frac{Com}{31}$ Com	0 and Y=-2.52 Move Apert ure to -4.5 ar csec from L P1 ments: Using - 1327_FP2 a nd XD=-4.5 arcsec (COS.sp.828 939) ments: adjustee 0 and Y=-2.00 1327_FP3 a nd XD=-4.5 arcsec (COS.sp.828 939) ments: adjustee (COS.sp.828 939)	arcsec (correspo NONE <u>21 motor steps pe</u> (3) AV75 d target position i 0 arcsec (corresp (3) AV75 d target position i	onding to YAPER=53 steps) COS, ALIGN/APER er arcsec. The aperture is moved from . COS/FUV, TIME-TAG, PSA in aperture by setting a POS TARG to ponding to YAPER=42 steps) COS/FUV, TIME-TAG, PSA in aperture by setting a POS TARG to	G130M 1327 A G130M	XAPER=42; YAPER=0.0 on position (XD=-2.5") to p BUFFER-TIME=10 0; FP-POS=2; FLASH=S0055D03 0 BUFFER-TIME=10 0; FP-POS=3; FLASH=S0055D03	POS TARG 0.0,-2.0 00 POS TARG 0.0,-2.0	[==>] 200 Secs (200 Secs) [==>] 200 Secs (200 Secs)	
$\frac{X=0}{29}$ $\frac{Com}{30}$ $\frac{Com}{X=0}$ $\frac{Com}{X=0}$	0 and $Y=-2.52$ Move Apert ure to -4.5 ar csec from L P1 ments: Using - 1327_FP2 a nd XD=-4.5 arcsec (COS.sp.828 939) ments: adjusted 0 and $Y=-2.00$ 1327_FP3 a nd XD=-4.5 arcsec (COS.sp.828 939) ments: adjusted 0 and $Y=-2.00$ Move Apert	arcsec (correspo NONE <u>21 motor steps pe</u> (3) AV75 d target position to 0 arcsec (corresp (3) AV75 d target position to 0 arcsec (corresp	onding to YAPER=53 steps) COS, ALIGN/APER er arcsec. The aperture is moved from . COS/FUV, TIME-TAG, PSA in aperture by setting a POS TARG to ponding to YAPER=42 steps) COS/FUV, TIME-TAG, PSA	G130M 1327 A G130M	XAPER=42; YAPER=0.0 on position (XD=-2.5") to p BUFFER-TIME=10 0; FP-POS=2; FLASH=S0055D03 0 BUFFER-TIME=10 0; FP-POS=3; FLASH=S0055D03	POS TARG 0.0,-2.0 00 POS TARG 0.0,-2.0	[==>] 200 Secs (200 Secs) [==>] 200 Secs (200 Secs)	
$\frac{X=0}{29}$ $\frac{Com}{30}$ $\frac{Com}{X=0}$ $\frac{Com}{X=0}$	0 and Y=-2.52 Move Apert ure to -4.5 ar csec from L P1 ments: Using - 1327_FP2 a nd XD=-4.5 arcsec (COS.sp.828 939) ments: adjusted 0 and Y=-2.00 1327_FP3 a nd XD=-4.5 arcsec (COS.sp.828 939) ments: adjusted 939) ments: adjusted 0 and Y=-2.00	arcsec (correspo NONE <u>21 motor steps pe</u> (3) AV75 d target position to 0 arcsec (corresp (3) AV75 d target position to 0 arcsec (corresp	onding to YAPER=53 steps) COS, ALIGN/APER er arcsec. The aperture is moved from . COS/FUV, TIME-TAG, PSA in aperture by setting a POS TARG to ponding to YAPER=42 steps) COS/FUV, TIME-TAG, PSA in aperture by setting a POS TARG to ponding to YAPER=42 steps)	G130M 1327 A G130M	XAPER=42; YAPER=0.0 on position (XD=-2.5") to p BUFFER-TIME=10 0; FP-POS=2; FLASH=S0055D03 0 BUFFER-TIME=10 0; FP-POS=3; FLASH=S0055D03 0	POS TARG 0.0,-2.0 00 POS TARG 0.0,-2.0	[==>] 200 Secs (200 Secs) $[==>]$ 200 Secs (200 Secs) $[==>]$	

p_{0} $a_{1} + 0 + 2 - v_{0}$ $a_{1} + 0 + 2 - v_{0}$	- QUICK-CHECK OF THE GIS	Solvi Specii	al inesolution at i			
33 1327_FP3 a (3) AV75 nd XD=-5 ar csec (COS.sp.828 939)	COS/FUV, TIME-TAG, PSA	G130M 1327 A	BUFFER-TIME=10 0; FP-POS=3; FLASH=S0055D03 0	POS TARG 0.0,-2.5 2	200 Secs (200 Secs) [==>]	[3]
<i>Comments: adjusted target position</i> <i>X</i> =0.0 and <i>Y</i> =-2.52 arcsec (correspondence)	n in aperture by setting a POS TARG to ponding to YAPER=53 steps)					
34 Move Apert NONE	COS, ALIGN/APER		XAPER=74;		0.0 Secs (0 Secs)	
ure to -6 arc sec from LP 1			YAPER=0.0		[==>]	[3]
Comments: Using -21 motor steps	per arcsec. The aperture is moved from L	P3 cross-dispersi	on position (XD=-2.5") to p	position (XD=-6.0") by -3.52"		
35 1327_FP3 a (3) AV75	COS/FUV, TIME-TAG, PSA	G130M		POS TARG 0.0,-3.5	200 Secs (200 Secs)	
nd XD=-6 ar csec (COS.sp.828 939)		1327 A	0; FP-POS=3; FLASH=S0055D03 0	2	[==>]	[3]
<i>Comments: adjusted target position</i> <i>X=0.0 and Y=-3.52 arcsec (correspondence)</i>	n in aperture by setting a POS TARG to ponding to YAPER=74 steps)					
36 Return to H DARK	S/C, DATA, NONE			SAA CONTOUR 31;	46 Secs (46 Secs)	
VNOM 167/ 169 (A/B)				SPEC COM INSTR ELHVADJPROP;	[==>]	
				QESIPARM ENDC TSA 167;		[3]
				QESIPARM ENDC TSB 169		
Comments: We start from HV=16. We calculate the exposure time as:	3/163 (A/B) and we are returning to HVN0 39 seconds + ceiling(XX*1.1) where XX	DM: 167/169 (A/B is step difference) (in HV steps) if the HV is se	et higher than where we started.		
For FUVA: (167-163)=4 steps For FUVB: (169-163)=6 steps.						
So exposure time is: $39s + (6*1.1) =$	15 6					





