

## 14443 - COS NUV Internal/External Wavelength Scale Monitor

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

#### **INVESTIGATORS**

Name	Institution	E-Mail
Dr. Paule G. Sonnentrucker (PI) (ESA Member) (Contact)	Space Telescope Science Institute - ESA	sonnentr@stsci.edu

### **VISITS**

Visit	Targets used in Visit	Configurations used in Visit	Orbits Used		OP Current with Visit?
01	(1) HD-6655	COS/NUV	1	11-Nov-2015 21:21:58.0	yes
02	(1) HD-6655	COS/NUV	1	11-Nov-2015 21:22:01.0	yes

<sup>2</sup> Total Orbits Used

#### **ABSTRACT**

This program monitors the offset between the internal and external wavelength scales: this offset is referred to as "DELTA" in the wavelength dispersion reference file and corrects for the shift between the WCA and PSA in TV03 versus the shift between the WCA and PSA in orbit: (WCA-PSA\_)\_TV03 - (WCA - PSA)\_orbit. Analysis of TV data indicates that this DELTA (offset) is cenwave and FPPOS independent for a particular grating, but it is grating and stripe dependent. To verify and monitor this, this program observes various cenwaves.

#### **OBSERVING DESCRIPTION**

This program monitors the offset between the internal and external wavelength scales by obtaining spectra of a select number of cenwaves for the G230L, G285M, G225M and G185M gratings three times per cycle. All data are obtained at FP-POS=3. This program structure has been modified compared to that of cycle 21 program 13529 due to GS acquisition issues. The double PEAKXD sequence was replaced by the traditional

Proposal 14443 (STScI Edit Number: 2, Created: Wednesday, November 11, 2015 9:22:02 PM EST) - Overview

ACQ/SEARCH, ACQ/PEAKXD and ACQ/PEAKD for the remaining visits following the recommendations after the failure investigation for V02. The BETWEEN ranges for the remaining visits were updated accordingly. This program was reduced to 2 observing epochs separated by about 6 months in Cycle 23, as 2 epochs were deemed sufficient to perform the dispersion solution verification for COS/NUV. Note also that the proper motion in RA was modified from 0.0111 sec of time/year to the latest GAIA measurement of 48.9 mas/year (or 0.00326 sec of time/year). The proper motion in declination did not need update.

Proposal 14443 - Visit 01 -	COS NILIV	Internal/External	Wavelength	Scale Monitor
1 10003ai 14443 - Visit 0 i -		IIIIGIIIai/LAIGIIIai	vvavciciiqiii	Scale Monitor

	Proposal 14443, Visit 01, implementation	Thu Nov 12 02:22:02 GMT 2015
탏	Diagnostic Status: Warning	
۱ŝ	Scientific Instruments: COS/NUV	
	Special Requirements: SCHED 30%; BETWEEN 15-FEB-2016:00:00:00 AND 25-FEB-2016:00:00:00	

# (Visit 01) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN (Visit 01) Warning (Form): For the best data quality, it is strongly recomn

(Visit 01) Warning (Form): For the best data quality, it is strongly recommended that all four FP-POS positions be used when observing at a given COS CENWAVE setting.

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S	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	
Jet	(1)	HD-6655	RA: 01 05 18.2073 (16.3258637d)	Proper Motion RA: 48.9 mas/yr	V=8.05+/-0.05	Reference Frame: ICRS	
arç			Dec: -72 33 14.47 (-72.55402d)	Proper Motion Dec: -0.118 arcsec/yr			
			Equinox: J2000	Epoch of Position: 2000			
ed				Radial Velocity: 19.5 km/sec			
í	Con	nments: This object was gen	erated by the target selector and retrieved from th	e SIMBAD database.			
_	Exte	ended=NO					

Proposal 14443 - Visit 01 - COS NUV Internal/External Wavelength Scale Monitor

Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	(1) HD-6655	COS/NUV, ACQ/SEARCH, PSA	G230L	SCAN-SIZE=3;			1. Secs (1 Secs)	
058)			2635 A	STEP-SIZE=1.767;			[==>]	
				CENTER=FLUX-W T-FLR	<i>I</i>			[1]
	(1) HD-6655	COS/NUV, ACQ/PEAKXD, PSA	G230L	STRIPE=MEDIUM			1. Secs (1 Secs)	
058)			2635 A				[==>]	[1]
	(1) HD-6655	COS/NUV, ACQ/PEAKD, PSA	G230L	NUM-POS=5;				
038)			2635 A				[==>]	633
				CENTER=FLUX-W T-FLR	7			[1]
	(1) HD-6655	COS/NUV, TIME-TAG, PSA	G230L				80 Secs (80 Secs)	
058)			2635 A	/.; FP-POS=3			[==>]	[1]
nt rate entire de ount rate stripe ount rate stripe ripe C contains	etector 9,104.456 A 12.450 B 8,154.580 e only second order l	light not calculated	CONOL	DIFFEED TO ACCUMENT			00 G (00 G )	
	(1) HD-6655	COS/NUV, TIME-TAG, PSA					· ·	
,			2950 A	FP-POS=3			[==>]	[1]
ount rate Stripe ripe C contains	B 11,140.147 only second order l	light not calculated COS/NUV, TIME-TAG, PSA	G230L 3000 A	BUFFER-TIME=12 4;			80  Secs  (80  Secs) $I = > I$	
				FP-POS=3			,	[1]
nt rate entire de ount rate Stripe ount rate Stripe	etector 12,785.862 A 1,362.901 B 10,485.536							
	(1) HD-6655	COS/NUV, TIME-TAG, PSA	G285M	BUFFER-TIME=11			90 Secs (90 Secs)	
785)			2676 A	42; FP-POS=3			[==>]	[1]
nt rate entire de ount rate Stripe ount rate Stripe	etector 1,309.571 e A 75.583 e B 213.285	A) 0.201		-				•
(COS.sp.739		COS/NUV, TIME-TAG, PSA	G225M				440 Secs (440 Secs)	
4/3)			2217 A	0; FP-POS=3			[==>]	[1]
nt rate entire de ount rate Stripe ount rate Stripe	etector 1,598.483 A 127.660	A) 0.329						
	(COS.sa.739 058)  (COS.sp.751 783)  (COS.sp.751 784)  (COS.sp.751 784)  (COS.sp.751 784)  ments: Brighte at rate entire dependent rate Stripe count rate Str	(COS.sa.739 (1) HD-6655 (COS.sa.739 (1) HD-6655 (OS8) (COS.sp.751 (1) HD-6655 (COS.sp.739 (1) HD-6655 (COS.s	(COS.sa.739 (1) HD-6655 COS/NUV, ACQ/SEARCH, PSA 058)  (COS.sa.739 (1) HD-6655 COS/NUV, ACQ/PEAKXD, PSA 058)  (COS.sa.739 (1) HD-6655 COS/NUV, ACQ/PEAKXD, PSA 058)  (COS.sa.739 (1) HD-6655 COS/NUV, TIME-TAG, PSA 058)  (COS.sa.739 (1) HD-6655 COS/NUV, TIME-TAG, PSA 058)  (COS.sa.739 (1) HD-6655 COS/NUV, TIME-TAG, PSA 058)  ments: Brightest Pixel (2642.97 A) 9.433  trate entire detector 9.104.456  ount rate stripe B 8.154.580  ripe C contains only second order light not calculated  (COS.sp.751 (1) HD-6655 COS/NUV, TIME-TAG, PSA 058)  ments: Brightest Pixel (at 2913.11 A) 10.691  trate entire detector 12.911.725  ount rate Stripe B 11.140.147  ripe C contains only second order light not calculated  (COS.sp.751 (1) HD-6655 COS/NUV, TIME-TAG, PSA 058)  ments: Brightest Pixel (at 2905.81A) 10.192  trate entire detector 12.785.862  ount rate Stripe A 1,362.901  ount rate Stripe B 10.485.36  ripe C contains only second order light not calculated  (COS.sp.751 (1) HD-6655 COS/NUV, TIME-TAG, PSA 058)  ments: Brightest Pixel (at 2668.63 A) 0.201  trate entire detector 1,309.571  ount rate Stripe A 25.583  ount rate Stripe B 213.285  ount rate Stripe C 83.277  (COS.sp.739 (1) HD-6655 COS/NUV, TIME-TAG, PSA 073)  ments: Brightest Pixel (at 2324.63 A) 0.329  trate entire detector 1,598.483  ments: Brightest Pixel (at 2324.63 A) 0.329  trate entire detector 1,598.483  ments: Brightest Pixel (at 2324.63 A) 0.329  trate entire detector 1,598.483  ments: Brightest Pixel (at 2324.63 A) 0.329	(COS.sa.739 (1) HD-6655	(COS.sa.739 (1) HD-6655	(COS.sa.739 (1) HD-6655	(COS sa.739 (1) HD-6655	

Proposal 14443 - Visit 01 - COS NUV Internal/External Wavelength Scale Monitor (COS.sp.739 (1) HD-6655 BUFFER-TIME=75 COS/NUV, TIME-TAG, PSA G185M 860 Secs (860 Secs) 343) 2010 A f = = > 1[1] FP-POS=3 Comments: Brightest Pixel (at 2120.84 A) 0.233 Count rate entire detector 1,220.388 Count rate Stripe A 32.767 Count rate Stripe B 61.246 Count rate Stripe C 188.949 Server Version: 20150609 Orbit 1 Exp. 2 Exp. 3 **€** • Exp. 4 € → Exp. 5 **Orbit Structure** Occultation **4** → Exp. 6 \*\*\* ORBITAL VISIBILITY OVERRUN = 41 GS Acq Exp. 7 Exp. 1 Exp. 8 € Exp. 9 Home 500 1500 2000 2500 3000 3500 4000 5500 sec 1000 4500 5000

Proposal 14443 - Visit 02 -	<ul> <li>COS NHV Internal/Extern</li> </ul>	al Wavelength Scale Monitor
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	<u> </u>	ppodal 11110 Viole 02 000 110 V Intornal Extornal Wavelength Coald Monitor	
Г		Proposal 14443, Visit 02, implementation	Thu Nov 12 02:22:02 GMT 2015
ı	sit	Diagnostic Status: Warning	
ı	<b> </b>	Scientific Instruments: COS/NUV	
		Special Requirements: SCHED 30%; BETWEEN 18-SEP-2016:00:00:00 AND 29-SEP-2016:00:00:00	

(Visit 02) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

ORBITAL VISIBILITY OVERRUN

(Visit 02) Warning (Orbit Plan	ner): ORBITAL	VISIBILITY	OVERRUN

ţ	# Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
get	(1) HD-6655	RA: 01 05 18.2073 (16.3258637d)	Proper Motion RA: 48.9 mas/yr	V=8.05+/-0.05	Reference Frame: ICRS
arc		Dec: -72 33 14.47 (-72.55402d)	Proper Motion Dec: -0.118 arcsec/yr		
Ë		Equinox: J2000	Epoch of Position: 2000		
Sec			Radial Velocity: 19.5 km/sec		
ᇆ	Comments: This object was go	enerated by the target selector and retrieved from th	e SIMBAD database.		
I — I.	Extended=NO				

Proposal 14443 - Visit 02 - COS NUV Internal/External Wavelength Scale Monitor

l"	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.sa.739	(1) HD-6655	COS/NUV, ACQ/SEARCH, PSA	G230L	SCAN-SIZE=3;	GSPAIR S0XG2765		1 Secs (1 Secs)	
	058)			2635 A	STEP-SIZE=1.767;	43F2S0XJ267306F1		[==>]	
					CENTER=FLUX-W T-FLR				[1]
2	(COS.sa.739	(1) HD-6655	COS/NUV, ACQ/PEAKXD, PSA	G230L	STRIPE=MEDIUM			1. Secs (1 Secs)	
	058)			2635 A				[==>]	[1]
3	(COS.sa.739 058)	(1) HD-6655	COS/NUV, ACQ/PEAKD, PSA	G230L	NUM-POS=5;			1 Secs (1 Secs)	
	038)			2635 A	STEP-SIZE=1;			[==>]	
					CENTER=FLUX-W T-FLR				[1]
4	(COS.sp.534 878)	(1) HD-6655	COS/NUV, TIME-TAG, PSA	G230L	BUFFER-TIME=17 7;			80 Secs (80 Secs)	
	070)			2635 A	FP-POS=3			[==>]	[1]
Cou C C	int rate entire de Count rate stripe Count rate stripe tripe C contains	B 8,154.580 s only second order	light not calculated						
5	(COS.sp.751 783)	(1) HD-6655	COS/NUV, TIME-TAG, PSA	G230L	BUFFER-TIME=12 3;			80 Secs (80 Secs)	
	763)			2950 A	FP-POS=3			I = > J	[1]
C	Count rate Stripe Count rate Stripe tripe C contains (COS.sp.751 784)	B 11,140.147 s only second order	light not calculated COS/NUV, TIME-TAG, PSA	G230L 3000 A	BUFFER-TIME=12 4;			80 Secs (80 Secs) [==>]	
				500011	FP-POS=3			1 7	[1]
Cou C C	int rate entire de Count rate Stripe Count rate Stripe	B 10,485.536							
7	(COS.sp.751	(1) HD-6655	COS/NUV, TIME-TAG, PSA	G285M	BUFFER-TIME=11			90 Secs (90 Secs)	
	785)			2676 A	42; FP-POS=3			[==>]	[1]
Cou C C	nments: Brighte int rate entire de Count rate Stripe Count rate Stripe Count rate Stripe	B 213.285	? A) 0.201						
8	(COS.sp.739	(1) HD-6655	COS/NUV, TIME-TAG, PSA	G225M	BUFFER-TIME=33			440 Secs (440 Secs)	
	473)			2217 A	0; FP-POS=3			[==>]	[1]
Cou C		B 250.096	3 A) 0.329						-

Proposal 14443 - Visit 02 - COS NUV Internal/External Wavelength Scale Monitor (COS.sp.739 (1) HD-6655 BUFFER-TIME=75 COS/NUV, TIME-TAG, PSA G185M 860 Secs (860 Secs) 343) 2010 A f = = > 1[1] FP-POS=3 Comments: Brightest Pixel (at 2120.84 A) 0.233 Count rate entire detector 1,220.388 Count rate Stripe A 32.767 Count rate Stripe B 61.246 Count rate Stripe C 188.949 Server Version: 20150609 Orbit 1 Exp. 2 Exp. 3 **€** • Exp. 4 € → Exp. 5 **Orbit Structure** \*\*\* ORBITAL VISIBILITY OVERRUN = 41 **←** Exp. 6 GS Acq Exp. 7 Occultation Exp. 1 Exp. 8 € Exp. 9 Home 500 1500 2000 2500 3000 3500 4000 5000 5500 sec 1000 4500