15459 - FUV COS Lamp Templates for G160M/1533

Cycle: 25, 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	DARK WAVE	COS/FUV S/C	1	18-May-2018 20:00:51.0	yes

1 Total Orbits Used

ABSTRACT

This program obtains COS FUV lamp template data for the wavelength calibration of G160M/1533 data, a new cenwave introduced for Cycle 26. The dispersion coefficients vary with absolute focus position and we want to update the lamp template data for LP4 with this new cenwave.

OBSERVING DESCRIPTION

This program follows the outline of the LP4 program 15369 (PI=Snyder) which obtained lamp template data for all cenwaves. In turn, this was based on SMOV program 11488 and Cycle 24 program 14856. First, a long (1800s) lamp exposure is used to allow the OSM mechanism to settle before

the lamp template data is taken. The lamp is regularly flashed for 30 sec every 120 sec during the long exposure using special engineering mode to sample the drift at defined regular intervals for later analysis. We then take 210 sec lamp exposures for cenwave G160M/1533 in each of the four FP-POS. The lamp is flashed in 30 sec intervals using special engineering mode during these exposures as well, so as to not overheat the lamp, so the total lamp exposure time is 120 s per FP-POS.

Special commanding:
(1) Since the wavelength calibration spectra land at LP2 for LP4 observations, we need special commanding to raise the HV to highest possible values to mitigate any gain sag holes.
(2) Since this program uses all four FP-POSs, special TEST row commanding with be needed to configure 1533 (this is in contrast to the wavelength calibration program, which does not use the TEST row). The TEST commanding follows 12501, the focus sweep for the 800 cenwave, as an illustration of how to command exposures at all FP-POSs for a cenwave that does not exist in APT yet.

The program is structured as follows:
- special commanding to define TEST row with G160M/1533 parameters (see below)
- Dark exposure to raise HV to 178/175
- Long lamp exposure to allow OSM mechanism to settle
- Short lamp exposures at FP-POS 1,2,3,4
- Dark to return to nominal HV 163/163
- special commanding to restore TEST row.

TEST row parameters for G160M/1533 are:
STEP=11218
RES1=18775
RES2=23405
FOCUS4=-646 (as derived from Focus Sweep program, 15452

NB: "FOCUS4" is required to specify which LP the focus refers to (i.e. LP4)

----SPECIAL REQUESTS:-----

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

SQL is used to meet the above requests. In case 1 qexposure.control_id is modified. In case 2 qeassociation records are deleted. Please see G. Chapman/M. Reinhart.

Visit	**Proposal 15459, Visit 01, implementation**	Sat May 19 00:00:53 GMT 2018
	Diagnostic Status: Warning	
	Scientific Instruments: S/C, COS/FUV	
	Special Requirements: SCHED 100%; BEFORE 30-JUN-2018:00:00:00; PARALLEL	
	*Comments: **We request that this program be executed before June 30th 2018.** This would enable us to perform the analysis and deliver the LAMPTAB by end of July 2018.*	
Diagnostics	(Visit 01) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS	
	(Visit 01) Warning (Orbit Planner): LAMP EXPOSURE EXCEEDS 300 SECONDS	
	(Visit 01) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU	

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Special Commanding to turn TEST into 1533 (@-731f)	DARK	S/C, DATA, NONE			SPEC COM INSTR ELOSMTEST; QESIPARM ACTION TEST; QESIPARM GRATING G160M; QESIPARM CENT WAVE 1533; QESIPARM STEP 1 1218; QESIPARM RES1 1 8775; QESIPARM RES2 2 3405; QESIPARM FOCUS 4 -646		14 Secs (14 Secs) [==>]	[1]
	Comments: Special Commanding to overwrite the G160M/TEST settings with the G160M/1533 settings. *OSM1 should be set to position of 11218, +15 steps from the G160M-1577A position of 11203.* *This shifts the Segment B coverage to 1342-1515A, and segment A to 1533-1707A (for FP-POS=3). FOCUS is at -646, -538 steps from the focus of G160M/1577 (-108). Focus value was determined by program 15452.*									
2	Move to highest HV	DARK	S/C, DATA, NONE			SAA CONTOUR 31; SPEC COM INSTR ELHVADJPROP; NEW ALIGNMENT ; QESIPARM ENDC TSA 178; QESIPARM ENDC TSB 175		56 Secs (56 Secs) [==>]	[1]
	Comments: Nominal HV is 163/163 for LP4 observations. We are going up to 178/175. *Max HV change is 178 - 163 = 15 steps* *Exposure time = 39 + ceiling(1.1*15) = 56 seconds*									
3		WAVE	COS/FUV, TIME-TAG, WCA	G160M 1577 A	FLASH=S0120D030; FP-POS=3; LIFETIME-POS=LP4; SEGMENT=BOTH			1800 Secs (1800 Secs) [==>]	[1]
	Comments: SQL is required to set qelogsheet.minwave to 1533, to bypass calibration and to delete qeassociations.									
4		WAVE	COS/FUV, TIME-TAG, WCA	G160M 1577 A	LIFETIME-POS=LP4; FLASH=S0060D030; SEGMENT=BOTH; FP-POS=1			210 Secs (210 Secs) [==>]	[1]
	Comments: SQL is required to set qelogsheet.minwave to 1533, to bypass calibration and to delete qeassociations.									

5		WAVE	COS/FUV, TIME-TAG, WCA	G160M 1577 A	LIFETIME-POS=LP 4; FLASH=S0060D030; SEGMENT=BOTH; FP-POS=2	210 Secs (210 Secs) *[==>]*	*[1]*
Comments: SQL is required to set qelogsheet.minwave to 1533, to bypass calibration and to delete qeassociations.							
6		WAVE	COS/FUV, TIME-TAG, WCA	G160M 1577 A	LIFETIME-POS=LP 4; FLASH=S0060D030; SEGMENT=BOTH; FP-POS=3	210 Secs (210 Secs) *[==>]*	*[1]*
Comments: SQL is required to set qelogsheet.minwave to 1533, to bypass calibration and to delete qeassociations.							
7		WAVE	COS/FUV, TIME-TAG, WCA	G160M 1577 A	LIFETIME-POS=LP 4; FLASH=S0060D030; SEGMENT=BOTH; FP-POS=4	210 Secs (210 Secs) *[==>]*	*[1]*
Comments: SQL is required to set qelogsheet.minwave to 1533, to bypass calibration and to delete qeassociations.							
8	Return to nominal HV	DARK	S/C, DATA, NONE		SAA CONTOUR 31; SPEC COM INSTR ELHVADJPROP; NEW ALIGNMENT ; QESIPARM ENDC TSA 163; QESIPARM ENDC TSB 163	39 Secs (39 Secs) *[==>]*	*[1]*
Comments: Adjust HV back to 163/163 for LP4 observations. *HV is decreasing on both segments.* *Exposure time = 39 seconds*							
9	Special Commanding to restore TEST row	DARK	S/C, DATA, NONE		SPEC COM INSTR ELOSMTEST; QESIPARM ACTION RESTORE	14 Secs (14 Secs) *[==>]*	*[1]*
Comments: Special Commanding to restore G160M/TEST settings.							