

ENGINEERING CHANGE ORDER				ECO No. COS-075	
Center for Astrophysics & Space Astronomy				Date 17 July 2002	
University of Colorado, Boulder				Sheet 1 of 2	
Drawing/Document Title	Drwg/Doc No.	Revision Letter		Special Distribution	
		Current	New		
OP-01	COS-01-0001	17	18		
				Stop Production Now	
				☐ Yes	
				☐ No	

Description of Change:

- Page 25 (Rev. 17), Sec. 1.3.5: In Table 1.3-6, change the FUV (XDL) pixel size in column four from ~6 × ~21 to 6 × 25.**
- Page 31 (Rev. 17), Sec. 2.1.2: Replace the last paragraph (right before 2.1.2.1) with the following modified paragraph.**

Since most moves of the ApM are anticipated to be small, periodic large moves need to be scheduled, once a year, to redistribute the gear lubricants to prevent long-term wear and changes in mechanism behavior. Dedicated move sequences should be scheduled for the ApM X and ApM Y motors that move them beyond their normal ranges for science operations, but not to their soft or hard limits. (Similar occasional large moves should also be scheduled once a year for the OSM1 focus motor.)

- Page 36 (Rev. 17), Sec. 2.1.3: Concatenate the following sentences to the end of the paragraph that begins "The location of the mechanism..."**

Since most moves of the OSM1 focus mechanism are anticipated to be small, periodic large moves need to be scheduled, once a year, to redistribute the gear lubricants to prevent long-term wear and changes in mechanism behavior. A dedicated move sequence should be scheduled for the OSM1 focus motor that moves it somewhat beyond its normal range for science operations, but not to its soft or hard limits.

Reason for Change: Updates to COS operations in OP-01.		Disposition/Effectivity					
		To Comply With ECO					
		Use As Is					
		Rework To ECO					
		Scrap And Rebuild					
		Record change Only					
		Other (See Above)					
Prepared By:	Jon Morse	Date	17 July 2002	CCB Required		☐ Approved	
Approved By:		Date		☐ Yes ☐ No		☐ NotApproved	
Approved By:		Date		☐ Class I ☐ Class II		Immediate	
Approved By:		Date				Incorporation	
Approved By:		Date				☐ Yes ☐ No	
Approved By:		Date		Completion			
Approved By:		Date		Date			
Project Mgr:		Date					

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			Stop Production Now ☐ Yes ☐ No

4. Page 37 (Rev 17), Sec. 2.1.3: Add a row to the bottom of Table 2.1-1 with the following entry, then add a second Table Note as described.

Optic	Central λ^* (Å)	Observed Wavelengths (Å)
NCM1-FF**	NUV Flat-Field	N/A

** NCM1-FF is the OSM1 position (rotation and focus) for NCM1 used to perform the NUV flat-field exposures. Due to the offset in the dispersion direction of the flat-field aperture (FCA) from the science apertures (PSA or BOA), much of the light in the flat-field calibration beam would miss the NUV grating on OSM2 with NCM1 placed in its normal position for NUV science operations. The NCM1-FF position is 5 rotation steps reverse of the nominal NCM1 (NUV Channel) science position, which restores the alignment to the NUV gratings and maximizes the throughput.

5. Page 126 (Rev. 17), Sec. 5.2.2.2: The centers of the science stripes on the NUV detector are at X = 794, 680, and 566 for stripes A, B, and C, respectively, and the pixel ranges in Table 5.2-5 need to be centered on these values. Replace all occurrences in Table 5.2-5 for stripe B of "630" with "655" and replace all occurrences of "680" with "705".

6. Page 51 (Rev. 17), Sec. 2.2.2: Replace Table 2.2-1 with the following.

Item	FUV	NUV	Rationale
Minimum count rate Minimum of 5 lines in each exposure	0.33 cts/sec/line	0.33 cts/sec/line	count rate integrated over emission line 100 counts in 5 minutes
maximum global count rate (Time- tag)	< 21,000 cts/sec global Time-tag	< 21,000 cts/sec global Time-tag	Maximum time-tag count rate limited by on-board data processing
maximum count rate in one emission line	75 cts/sec/resel	800 cts/sec/resel	Local bright object protection max rate derived from CARD limits: FUV: 1500 cts/sec/resel ÷ 20 NUV: 200 cts/sec/pixel × (2×2) (optimistic resolution)
maximum count rate in one pixel	5 cts/sec/pixel	200 cts/sec/pixel	charge replenishment + uniform image illumination
accumulated counts in emission line	2.2 10 ⁷ cts [300,000 sec	2.4 10 ⁸ cts [300,000 sec	Threshold for onset of gain sag: FUV 10 ⁹ cts/mm ²

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OP-01	COS-01-0001	17	18		
				Stop Production Now	
				☐ Yes	
				☐ No	
image per year	exposure = 1000 five min exposures @ 75 cts/sec]	exposure 1000 five min exposures @ 800 cts/sec]	NUV 10 ¹⁰ cts/mm ²		