Proposal 13192 (STScI Edit Number: 5, Created: Friday, May 3, 2019 at 10:00:33 PM Eastern Standard Time) - Overview



## 13192 - COS Side 2 Initial NUV Channel Checkout

Cycle: 26, 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	<b>OP</b> Current with Visit?
01	NONE WAVE	COS COS/NUV	1	03-May-2019 23:00:18.0	yes
02	(1) NGC188-41 NONE	COS COS/NUV	2	03-May-2019 23:00:24.0	yes
03	(2) IDK-M002 NONE	COS COS/NUV	3	03-May-2019 23:00:31.0	yes

6 Total Orbits Used

#### ABSTRACT

This program will perform an initial checkout of the NUV channel after switching the instrument to use the Side 2 electronics. The location of the aperture will be checked using the internal wavecal lamp, and an NUV focus run will be made to verify that the focus has not changed.

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This program consists of two visits.

Visit 01 (Internal):

Images of the wavecal lamp will be taken at the nominal Side 2 aperture position, plus at offset positions in both dispersion and cross-dispersion direction in order to verify that the images and spectra will fall within the same subarrays used on Side 1.

Visit 02 (External): An NUV focus sweep will be done to verify that the focus is at the expected location. This is based on the one done in Program 11469. See ISR 2010-04

----- Additional Comments ------

Scheduling constraints:

\*This program should execute after program 13189 (COS Side 2 NUV Detector Recovery After MEB Side Switch) completes.

\*\* following a success oriented approach this version of the program removes constraints between visits in this program and changes the ID of the program used in the only remaining constraint - C. Oliveira \*\*

#### Brief Summary of Analysis Plan:

Visit 01: The location of the reference spot at (0",0") will be measured and compared to the nominal location from side 1. The side 1 data used for the comparison should be from a target acquisition image using MIRRORA/PSA obtained as closely as possible in time to the side 2 data. This is because there is a secular motion of the lamp spot along both the dispersion and cross-dispersion directions. The analysis will take into account that there is a scatter in the position of the image of the wavecal from exposure to exposure. At the time of writing this scatter is approximately +/-30 pix in the dispersion direction, and +/-3 pix in the cross-dispersion direction.

Visit 02: To verify that the focus remains unchanged the FWHM of the spots on the detector as a function of focus offset will be measured and compared to data obtained in program 11469 in SMOV. Note that an NUV focus sweep will be executed in the Cycle 21 calibration program to verify that the NUV focus has not changed since SMOV. The analysis of side 2 data should take the results of the Cycle 21 program into account.

\*\*\*May 2019: One Gyro Contingency Visits Added\*\*\*:

One additional contingency visit was added to this program, which contains a target that can be used if HST is operating in one-gyro mode and NGC188-41 is not visible. Under one-gyro mode, NGC188-41 is not continuously visible. The target added (IDK-M002) was chosen to have visibility windows that complement NGC188-41 under one-gyro operations, such that this program can be be executed at any time. The comparison data for the focus sweep using the new target was obtained in Program 15681 (PI Sahnow).

#### PLEASE NOTE:

- If HST is operating under three-gyro mode, do NOT execute contingency visit 03.

- If HST is operating under one-gyro mode at the time of Side-1 electronics failure, AND NGC188-41 is not visible, execute contingency Visit 03, along with Visit 01.

#### Proposal 13192 - Wavecal Exposures (01) - COS Side 2 Initial NUV Channel Checkout

	Proposal 13192, Wavecal Exposures (01), implementation	Sat May 04 03:00:33 GMT 2019
÷	Diagnostic Status: Warning	
/is	Scientific Instruments: COS, COS/NUV	
-	Special Requirements: (none)	
	Comments: This visit will verify that the aperture is in the right location, and will collect exposures at several offset positions to allow it to be adjusted if it isn't.	
Diagnostics	(Wavecal Exposures (01)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU	

## Proposal 13192 - Wavecal Exposures (01) - COS Side 2 Initial NUV Channel Checkout

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Comment: NV Exposure in a onomial position.         Same exposure line as Program 2644         Comment: Aperture nured to approximately (-05, -05) arraceonds in (dispersion, cross-dispersion). Sole is -00.076 arcsec/TAPER step (dispersion), and -0.076 arcsec/TAPER step (cross-dispersion).         3       Warced       WAVE       COS.NUV, TIME-TAG, WCA       MIRRORA       [1=>1]       [1]         Comments: NV Exposure at offset position.       COS.NUV, TIME-TAG, WCA       MIRRORA       [2]       [1]       [1]         Comments: NV Exposure at offset position.       COS.NUV, TIME-TAG, WCA       MIRRORA       [2]       [1]       [1]         Comments: NV Exposure at offset position.       COS.NUV, TIME-TAG, WCA       MIRRORA       [2]       [1]       [1]         4       Aperture numered to (-0, +0.0) arraceonds in (dispersion, cross-dispersion), Stoke is +0.0076 arcsec?TAPER step (dispersion), and -0.0176 arcsec?TAPER step									[==>]	[1]
Some expanse ison of Propent 5124         Observed System           2         Aperture of NONE         COS, ALIGNAPER         VAPER=10;         [1=-2]         [1]           3         Wavesal         WAVE         COSNUV, TIME: TAG, WCA         MIRRORA         [1=-2]         [1]           4         Aperture numed to approximately (-0.5, -0.5) arcseconds in (dispersion, cross-dispersion); Scale is +0.076 arcsec/TAPER step (dispersion), and -0.076 arcs	Cor	mments: NUV E	Exposure at nor	minal position.						
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5       Value U VII       Colorer, Hull-Frid, WCA       MIRKNAK         Comment: NUV Exposure at offset position.       III         4       Aperture and ( $0.05, \pm 0.0$ ) arcseconds in (dispersion, cross-dispersion). See is $\pm 0.0476$ arcsec/VAPER step (dispersion), and $0.0476$ arcsec/VAPER step (dispersion), and $0.0476$ arcsec/VAPER step (dispersion).         5       Wavecal       WAVE       COS.ALIGNAPER       YAPER-10; (I = > ]       III         6       Aperture at offset position.       0 Secs. (0 Secs)       III         7       Wavecal       WAVE       COS.ALIGNAPER       YAPER-10; (I = > ]       III         6       Aperture at (NONE       COS.ALIGNAPER       YAPER-10; (I = > ]       III         7       Wavecal       WAVE       COSNUV, TIME-TAG, WCA       MIRRORA       20 Secs. (0 Secs)       III         7       Wavecal       WAVE       COSNUV, TIME-TAG, WCA       MIRRORA       20 Secs. (0 Secs)       III         7       Wavecal       WAVE       COSNUV, TIME-TAG, WCA       MIRRORA       20 Secs. (0 Secs)       IIII         8       Aperture at (NONE       COS, ALIGNAPER       YAPER-10,       IIII       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	3	Wayacal	wave	COS/NUV TIME TAG WCA	MIDDODA	<i>200). Scale is</i> +0.0470	arcsec/IAPEK step (at	ispersion), and -0.0	30 Sacs (30 Sacs)	
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5       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRRORA $[1=>7]$ [J]         6       Aperture at (NONE       COS, ALIGN/APER       YAPER=-10;       [Sees: (0 Sees: )]       [J]         7       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRRORA       [Sees: (0 Sees: )]       [J]         7       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRRORA       [Sees: (0 Sees: )]       [J]         7       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRRORA       [Sees: (0 Sees: )]       [J]         7       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRRORA       [Sees: (0 Sees: )]       [J]         7       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRRORA       [Sees: (0 Sees: )]       [J]         8       Aperture at (NONE       COS, ALIGN/APER       YAPER=-10;       [Sees: (0 Sees: )]       [J]         9       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRRORA       [Sees: (0 Sees: )]       [J]         10       Aperture at (NONE       COS, ALIGN/APER       YAPER=-10;       [Sees: (0 Sees: )]       [J]         10       Comments: NUV Exposure at offset position.       [sees: (0 Sees: )]       [sees: (0 Sees: )]	Со	mments: Apertu	ure moved to (-(	(0.5, +0.0) arcseconds in (dispersion, cross-di	spersion). Scale is -	+0.0476 arcsec/YAPE	R step (dispersion), and	1 -0.0476 arcsec/XA	APER step (cross-dispersion).	1 1-1
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6       Aperture at (_NONE       COS, ALIGN/APER       YAPER=-10; XAPER=-10.       0       III         7       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRORA       30       Sees (30       III         7       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRORA       30       Sees (30       III         7       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRORA       30       Sees (30       See (30	Co	mments: NUV F	Exposure at off:	set position.						
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7       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRRORA $30 \text{ Secs} (30 \text{ Secs})$ $   _{-> }$ $   _{-> }$ $   _{-> }$ Comments: NUV Exposure at offset position.       8       Aperture at (NONE       COS, ALIGN/APER       YAPER=0; XAPER=-10. $0 \text{ Secs} (0 \text{ Secs})$ $   _{-> }$ $    _{-> }$ $   _{-> }$ $   _{-> }$ $   _{-> }$ $    _{-> }$ $   _{-> }$ $    _{-> }$ $    _{-> }$ $    _{-> }$ $    _{-> }$ $    _{-> }$ $    _{-> }$ $     _{-> }$ $     _{-> }$ $     _{-> }$ $     _{-> }$ $     _{-> }$ $     _{-> }$ $     _{-> }$ $     _{-> }$ $     _{-> }$ $      _{-> }$ $      _{-> }$ $     _{-> }$ $       _{-> }$ $       _{-> }$ $            _{-> }$ <td< td=""><td>Co</td><td>mments: Apertu</td><td>ıre moved to (-(</td><td>0.5,+0.5) arcseconds in (dispersion, cross-di</td><td>spersion). Scale is</td><td>+0.0476 arcsec/YAPE</td><td>R step (dispersion), and</td><td>1 -0.0476 arcsec/XA</td><td>APER step (cross-dispersion).</td><td>-</td></td<>	Co	mments: Apertu	ıre moved to (-(	0.5,+0.5) arcseconds in (dispersion, cross-di	spersion). Scale is	+0.0476 arcsec/YAPE	R step (dispersion), and	1 -0.0476 arcsec/XA	APER step (cross-dispersion).	-
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S       Aperture at (NONE       COS, ALIGN/APER       YAPER=0; XAPER=10.       0 Secs (0 Secs)       1         Comments: Aperture moved to (+0.0,+0.5) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion).       Sole (1)       1         9       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRRORA       30 Secs (0 Secs)       1         10       Aperture at offset position.	Co	mments: NUV E	Exposure at off:	set position.						
$  400, 40.5 \rangle XAPER=-10.   [=>] [1] \\ Comments: Aperture moved to (+0.0, +0.5) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion). \\ 9 Wavecal WAVE COS/NUV, TIME-TAG, WCA MIRRORA 30 Sees (30 Sees)   [=>] [1] \\ Comments: NUV Exposure at offset position. \\ 10 Aperture at (NONE COS, ALIGN/APER YAPER=10; [=>] [1] \\ Comments: Aperture moved to (+0.5, +0.5) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion). \\ 11 Wavecal WAVE COS/NUV, TIME-TAG, WCA MIRRORA 30 Sees (30 Sees)   [=>] [1] \\ Comments: NUV Exposure at offset position. \\ 12 Aperture at (NONE COS, ALIGN/APER YAPER=10; [=>] [1] \\ Comments: Aperture moved to (+0.5, +0.0) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion). \\ 12 Aperture at (NONE COS, ALIGN/APER YAPER=10; [=>] [1] \\ Comments: Aperture moved to (+0.5, +0.0) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion). \\ 13 Wavecal WAVE COS/NUV, TIME-TAG, WCA MIRRORA 30 Sees (30 Sees) [==>] [1] \\ Comments: NUV Exposure at offset position. \\ 13 Wavecal WAVE COS/NUV, TIME-TAG, WCA MIRRORA 30 Sees (30 Sees) [==>] [1] \\ Comments: Aperture moved to (+0.5, +0.0) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion). \\ 13 Wavecal WAVE COS/NUV, TIME-TAG, WCA MIRRORA 30 Sees (30 Sees) [==>] [1] \\ Comments: NUV Exposure at offset position. \\ 14 Aperture at (NONE COS, ALIGN/APER YAPER=10; []] \\ Comments: NUV Exposure at offset position. \\ 14 Aperture at (NONE COS, ALIGN/APER YAPER=10, []] \\ Comments: NUV Exposure at offset position. \\ 14 Aperture at (NONE COS, ALIGN/APER YAPER=10, []] \\ Comments: NUV Exposure at offset position. \\ 14 Aperture at (NONE COS, ALIG$	8	Aperture at (	NONE	COS, ALIGN/APER		YAPER=0;			0 Secs (0 Secs)	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		+0.0,+0.5)				XAPER=-10.			[==>]	[1]
9       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRRORA       30 Secs (30 Secs)       [[==>]       [[1]         Comments: NUV Exposure at offset position.       10       Aperture at (       NON E       COS, ALIGN/APER       YAPER=10;       []==>]       [[1]]         Comments: Aperture moved to (+0.5,+0.5)       COS/NUV, TIME-TAG, WCA       MIRRORA       30 Secs (0 Secs)       []==>]       [[1]]         Comments: Aperture moved to (+0.5,+0.5)       arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion).       []==>]       [[]]         Comments: NUV Exposure at offset position.       30 Secs (0 Secs)       []==>]       [[]]         Comments: NUV Exposure at offset position.       11       KAPER=0       []==>]       []]         Comments: NUV Exposure at offset position.       12       Aperture moved to (+0.5,+0.0)       arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion).         13       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRRORA       30 Secs (30 Secs)       []         13       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRRORA       30 Secs (30 Secs)       []         14       Aperture at (       NONE       COS, ALI	Co	mments: Apertu	ire moved to (+	-0.0,+0.5) arcseconds in (dispersion, cross-d	lispersion). Scale is	+0.0476 arcsec/YAPH	ER step (dispersion), an	d -0.0476 arcsec/X	APER step (cross-dispersion).	
$ \begin{bmatrix} [==] & [I] \\ [I] \\ Comments: NUV Exposure at offset position. \\ \hline \\ 10 Aperture at (NONE COS, ALIGN/APER YAPER TO, Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion). \\ \hline \\ [==] & [I] \\ \hline \\ Comments: NUV Exposure at offset position. \\ \hline \\ \hline \\ \hline \\ \\ \hline \\ \\ \hline \\ \hline \\ \\ \hline \\ \hline \\ \\ \hline \\ \\ \hline \\ \\ \hline \\ \hline \\ \\ \hline \\ \hline \\ \hline \\ \\ \hline \\ \hline \\ \hline \\ \\ \hline \\ \hline \\ \\ \hline \\ \hline \\ \hline \\ \\ \hline \\ \hline \\ \hline \\ \hline \\ \\ \hline \\ \hline \\ \hline \\ \hline \\ \\ \hline \hline \\ \hline \\ \hline \\ \hline \\ \hline \hline \\ \hline \\ \hline \hline \\ \hline \\ \hline \hline \\ \hline \hline \\ \hline \\ \hline \hline \hline \\ \hline \hline \hline \\ \hline \hline \hline \hline \\ \hline \hline \hline \hline \hline \\ \hline \hline \hline \hline \\ \hline \hline \hline \hline \hline \\ \hline \hline \hline \hline \hline \\ \hline \\ \hline \hline \hline \hline \hline \hline \hline \hline \hline \\ \hline \hline$	9	Wavecal	WAVE	COS/NUV, TIME-TAG, WCA	MIRRORA				30 Secs (30 Secs)	
Comments: NUV Exposure at offset position.         10       Aperture at (NONE +0.5,+0.5)       COS, ALIGN/APER KAPER=10; XAPER=10.       0 Secs. (0 Secs) [==>]       []         Comments: Aperture moved to (+0.5,+0.5) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion).       []         11       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRRORA       []       []         Comments: NUV Exposure at offset position.       COS, ALIGN/APER       YAPER=10; YAPER=10; (]]       []       []         Comments: NUV Exposure at offset position.       COS, ALIGN/APER       YAPER=10; YAPER=0       []       []         Comments: Aperture moved to (+0.5,+0.0) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion).       []         12       Aperture at (NONE +0.5,+0.0)       COS, NUV, TIME-TAG, WCA       MIRRORA       []       []         13       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRRORA       []       []         13       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRRORA       []       []       []         14       Aperture at offset position.       II       Aperture at offset position.       []       []       []       <									[==>]	[1]
10       Aperture at (NONE       COS, ALIGN/APER       YAPER=10; XAPER=10.       0 Secs (0 Secs)       []]         Comments: Aperture moved to (+0.5,+0.5) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion).       []]         11       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRRORA       30 Secs (30 Secs)       []]         Comments: NUV Exposure at offset position.	Coi	mments: NUV E	Exposure at offs	set position.						
+0.5, +0.5       XAPER=-10.       [1]         Comments: Aperture moved to (+0.5, +0.5) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion).       30 Secs (30 Secs)         11       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRORA       30 Secs (30 Secs)       [1]         Comments: NUV Exposure at offset position.       12       Aperture at (NONE       COS, ALIGN/APER       YAPER=10; XAPER=0       [1]       [1]         Comments: Aperture moved to (+0.5,+0.0) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion).       [1]         Comments: NUV Exposure at offset position.       13       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRORA       30 Secs (0 Secs)       [1]         13       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRORA       30 Secs (30 Secs)       [1]         Comments: NUV Exposure at offset position.       13       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRORA       30 Secs (30 Secs)       [1]         Comments: NUV Exposure at offset position.       14       Aperture at (NONE       COS, ALIGN/APER       YAPER=10; XAPER=10.       [2]       [1]         Comments: Aperture moved to (+0.5,-0.5) arcseconds in (dispersion, cross-dispe	10	Aperture at (	NONE	COS, ALIGN/APER		YAPER=10;			0 Secs (0 Secs)	
Comments: Aperture moved to $(+0.5, +0.5)$ arcseconds in (dispersion, cross-dispersion). Scale is $+0.0476$ arcsec/YAPER step (dispersion), and $-0.0476$ arcsec/XAPER step (cross-dispersion).         11       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRORA $30 \text{ Secs } (30 \text{ Secs })$ $[==>]$ [1]         Comments: NUV Exposure at offset position.       Image: constant of the position of the position.         12       Aperture at ( NONE       COS, ALIGN/APER       YAPER=10; XAPER=0       Image: constant of the position.       Image: constant of the position.         13       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRORA       Image: constant of the position.         14       Aperture at offset position.       Image: constant of the position.       Image: constant of the position.       Image: constant of the position.         14       Aperture at ( NONE       COS, ALIGN/APER       YAPER=10; XAPER=10.       Image: constant of the position.       Image: constant of the position.         14       Aperture moved to (+0.5, -0.5) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion).       Image: constant of the position.         14       Aperture at ( NONE       COS, ALIGN/		+0.5,+0.5)				XAPER=-10.			[==>]	[1]
11       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRRORA $30 \text{ Secs } (30 \text{ Secs })$ $[=>]$ $[I]$ Comments: NUV Exposure at offset position.       COS, ALIGN/APER       YAPER=10; $[=>]$ $[I]$ 12       Aperture at ( NONE       COS, ALIGN/APER       YAPER=10; $[=>]$ $[I]$ Comments: Aperture moved to (+0.5,+0.0) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion).       II]         13       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRRORA       30 Secs (30 Secs) $[=>]$ $[I]$ Comments: NUV Exposure at offset position.       III       Comments: NUV Exposure at offset position.       30 Secs (30 Secs) $[=>]$ $[I]$ I4       Aperture at ( NONE       COS, ALIGN/APER       YAPER=10; $[=>]$ $[I]$ Comments: Aperture moved to (+0.5,-0.5)       arcseconds in (dispersion), cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion). $[==>]$ $[I]$ Comments: Aperture moved to (+0.5,-0.5) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion). $[I]$	Con	mments: Apertu	ire moved to (+	-0.5,+0.5) arcseconds in (dispersion, cross-d	lispersion). Scale is	+0.0476 arcsec/YAPH	ER step (dispersion), an	d -0.0476 arcsec/X	APER step (cross-dispersion).	
$ \begin{bmatrix} [=>] & [1] \\ [=>] & [1] \\ [=>] & [1] \\ \hline Comments: NUV Exposure at offset position. \\ \hline 12 & Aperture at ( NONE & COS, ALIGN/APER & YAPER=10; \\ +0.5,+0.0 & XAPER=0 & [=>] & [1] \\ \hline Comments: Aperture moved to (+0.5,+0.0) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion). \\ \hline 13 & Wavecal & WAVE & COS/NUV, TIME-TAG, WCA & MIRORA & 30 Secs (30 Secs) & [==>] & [1] \\ \hline Comments: NUV Exposure at offset position. \\ \hline 14 & Aperture at ( NONE & COS, ALIGN/APER & YAPER=10; \\ +0.5,-0.5) & COS, ALIGN/APER & YAPER=10; \\ +0.5,-0.5) & XAPER=10. & [==>] & [1] \\ \hline Comments: Aperture moved to (+0.5,-0.5) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion). \\ \hline Comments: Aperture moved to (+0.5,-0.5) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion). \\ \hline Comments: Aperture moved to (+0.5,-0.5) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion). \\ \hline \$	11	Wavecal	WAVE	COS/NUV, TIME-TAG, WCA	MIRRORA				30 Secs (30 Secs)	
Comments: NUV Exposure at offset position.         12       Aperture at ( NONE +0.5,+0.0)       COS, ALIGN/APER COS, ALIGN/APER       YAPER=10; XAPER=0       0 Secs (0 Secs)       [==>]       [1]         Comments: Aperture moved to (+0.5,+0.0) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion).       30 Secs (30 Secs)       []         13       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRORA       30 Secs (30 Secs)       []         14       Aperture at ( NONE +0.5,-0.5)       COS, ALIGN/APER COS, ALIGN/APER       YAPER=10; XAPER=10.       0 Secs (0 Secs)       []         14       Aperture at ( NONE +0.5,-0.5)       COS, ALIGN/APER XAPER=10.       YAPER=10; XAPER=10.       0 Secs (0 Secs)       []         Comments: Aperture moved to (+0.5,-0.5) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion).       []									[==>]	[1]
12       Aperture at ( NONE +0.5,+0.0)       COS, ALIGN/APER       YAPER=10; XAPER=0       Image: cost of the second	Cor	mments: NUV E	Exposure at offs	set position.						
XAPER=0       []=>]       []]         Comments: Aperture moved to (+0.5,+0.0) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion).       []]         13       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRRORA       30 Secs (30 Secs)       []]         13       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRRORA       30 Secs (0 Secs)       []]         Comments: NUV Exposure at offset position.       III       []]       []]       []]         Comments: NUV Exposure at offset position.       VAPER=10;       []]       []]         Comments: Aperture at (       NONE       COS, ALIGN/APER       YAPER=10;       []]         +0.5, -0.5)       COS, acseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion).       []]         Comments: Aperture moved to (+0.5, -0.5) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion).	12	Aperture at $(+0.5 \pm 0.0)$	NONE	COS, ALIGN/APER		YAPER=10;			0 Secs (0 Secs)	
Comments: Aperture moved to (+0.5,+0.0) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion).         13       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRRORA       30 Secs (30 Secs)       []         13       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRRORA       30 Secs (0 Secs)       []         14       Aperture at (       NONE       COS, ALIGN/APER       YAPER=10;       0 Secs (0 Secs)       []         14       Aperture at (       NONE       COS, ALIGN/APER       YAPER=10;       []       []         Comments: Aperture moved to (+0.5,-0.5)       arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion).       []]		+0.5,+0.0)				XAPER=0			[==>]	[1]
13       Wavecal       WAVE       COS/NUV, TIME-TAG, WCA       MIRRORA $30 \text{ Secs } (30 \text{ Secs })$ $[]]$ <i>Comments: NUV Exposure at offset position.</i> II $[]=>]$ [I]         14       Aperture at ( NONE +0.5,-0.5)       COS, ALIGN/APER COS, ALIGN/APER       YAPER=10; XAPER=10.       0 Secs (0 Secs)       [] <i>Comments: Aperture moved to</i> (+0.5,-0.5) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion).       [I]	Con	mments: Apertu	ire moved to (+	-0.5,+0.0) arcseconds in (dispersion, cross-d	lispersion). Scale is	+0.0476 arcsec/YAPE	ER step (dispersion), an	<u>d -0.0476 arcsec/X</u>	APER step (cross-dispersion).	
$[==>] [1]$ Comments: NUV Exposure at offset position. $14  \text{Aperture at (NONE}  COS, \text{ALIGN/APER}  YAPER=10; \\ +0.5, -0.5)  XAPER=10.  [==>]  [1]$ Comments: Aperture moved to (+0.5, -0.5) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion).	13	Wavecal	WAVE	COS/NUV, TIME-TAG, WCA	MIRRORA				30 Secs (30 Secs)	
14       Aperture at (       NONE       COS, ALIGN/APER       YAPER=10;       0 Secs (0 Secs) $+0.5, -0.5$ ) $COS, ALIGN/APER$ YAPER=10; $I = > I$ $I = > I$ $I = I = > I$ $I = I = > I$ $I = I$ $I = I = I$ $I = I$ $I = I = I$ $I = I$ $I = I = I$ $I = I$ $I = I$ $I = I = I$ $I = I$	Со	mments: NUV H	Exposure at off	fset position.					[==>]	[1]
+ $\dot{0.5}$ ,- $0.5$ ) XAPER=10. [1] Comments: Aperture moved to (+ $0.5$ ,- $0.5$ ) arcseconds in (dispersion, cross-dispersion). Scale is + $0.0476$ arcsec/YAPER step (dispersion), and - $0.0476$ arcsec/XAPER step (cross-dispersion).	14	Aperture at (	NONE	COS, ALIGN/APER		YAPER=10;			0 Secs (0 Secs)	
Comments: Aperture moved to (+0.5,-0.5) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion).		+0.5,-0.5)				XAPER=10.			[==>]	[1]
	Со	mments: Apertu	re moved to (+	+0.5,-0.5) arcseconds in (dispersion, cross-di	spersion). Scale is -	+0.0476 arcsec/YAPE	R step (dispersion), and	1 -0.0476 arcsec/XF	APER step (cross-dispersion).	

#### Proposal 13192 - Wavecal Exposures (01) - COS Side 2 Initial NUV Channel Checkout

1	5 W	avecal	WAVE	COS/NUV, TIME-TAG, WCA	MIRRORA		30 Secs (30 Secs)	
							[==>]	[1]
C	ommer	nts: NUV E	xposure at offset pos	sition.				
1	5 Ap	perture at (	NONE	COS, ALIGN/APER		YAPER=0;	0 Secs (0 Secs)	
	+0	+0.0,-0.5)		XAPER=10.	[==>]	[1]		
C	Comments: Aperture moved to (+0.0,-0.5) arcseconds in (dispersion, cross-dispersion). Scale is +0.0476 arcsec/YAPER step (dispersion), and -0.0476 arcsec/XAPER step (cross-dispersion).							
1	7 W	avecal	WAVE	COS/NUV, TIME-TAG, WCA	MIRRORA		30 Secs (30 Secs)	
							[==>]	[1]
C	ommer	nts: NUV E	xposure at offset pos	sition.				
1	8 Ap	perture bac	NONE	COS, ALIGN/APER		YAPER=0;	0 Secs (0 Secs)	
	k t	to (0.0,0.0)				XAPER=0	[==>]	[1]
C	ommer	nts: Move c	perture back to nom	inal position				
1	9 W	avecal	WAVE	COS/NUV, TIME-TAG, WCA	MIRRORA		30 Secs (30 Secs)	
							[==>]	[1]
C	ommer	nts: NUV E	xposure at nominal p	position.				

Proposal 13192 - Wavecal Exposures (01) - COS Side 2 Initial NUV Channel Checkout



	Proposal 13192, NUV Focus Sweep	: NGC188-41 (02), implementation			Sat May 04 03:00:33 GMT 2019					
	Diagnostic Status: Warning									
	Scientific Instruments: COS, COS/NU	UV								
	Special Requirements: SCHED 100%									
Visi	Comments: This visit will test the NU or so over $a +/-200$ step range.	VACQ/IMAGE to verify that it works. It will a	ulso do a fine focus sweep modeled on Program 114	69 Visit 94. From ISR 2010-04, the	PSF FWHM should change by a factor of two					
	The target, NGC188-41, was used in 11469 NUV Focus sweep. A Visit Planner run in March 2013 shows that it is visible all year. Target visibility will have to be rechecked if operating conditions change, e.g. if there are gyro failures which change the observatory pointing capabilities.									
	Note that APT has a spurious warning	g for focus sweeps: "This visit contains an AL	IGN/OSM exposure which should be preceded by an	FUV science exposure to define th	e starting position for the scan."					
Diagnostics	(NUV Focus Sweep: NGC188-41 (02	?)) Warning (Form): This visit contains an AL	IGN/OSM exposure which should be preceded by ar	n FUV science exposure to define th	he starting position for the scan.					
	# Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous					
	(1) NGC188-41	RA: 00 45 56.6230 (11.4859292d)	Proper Motion RA: -0.003 sec of time/yr	V=14.21+/-0.2	Reference Frame: GSC1					
	Alt Name1: VID-1316- ZZZZ-PLATE	Dec: +85 17 28.85 (85.29135d) Equinox: J2000 Plate Id: ZZZZ	Proper Motion Dec: -0.013 arcsec/yr Epoch of Position: 2000	B-V=0.46 Galex NUV Flux=14 ; Galex NUV mag=18.47 E(B- V)=0.089; (B-V)intrinsic = 0.37	9 7					
	Comments: This target was used in Program 11469. The following information is from the Phase II of that program:									
	GALEX J004557.4+851728 obj id 2710790968 559273041									
	E(B-V)=0.0888									
s	GALEX NUV flux = 149.11 +/-8.6975									
rget	GALEX NUV mag 18.4662 +/- 0.06.	33								
Ta	actual coordinates used from GSC1 p	late ZZZZ courtesy Matt Lallo								
xed	proper motion from plate ZZZZ (and )	Matt Lallo) assumption is values in supporting	g table are sec time per year and sec arc per year							
ίΞ	This target is on NGC-188 GSC1 spec plate ZZZZ and Lallo determined (25	cial astrometric plate ZZZZ and has astrometr June 2008) that there are numerous available	ric coordinates. This star is star 41 on special plate 2 potential guide stars for this target.	ZZZZ. See above comment about p.	roper motion. Keyes and Lallo have inspected					
	Using the above information, the ETC	C has been run with the following parameters:								
	Spectrum: Castelli-Kurucz Models F2V 7000 4.0 Extinction E(B-V): Milky Way Diffuse (Rv=3.1) = 0.09 applied before normalization Normalization: Renormalized to Johnson V = 14.21 in magnitudes relative to Vega									
	The result was COS.im.467283. This, use the GALEX NUV Magnitude inste For completeness, I used the same pa Category=STAR Description=[F3-F9] Extended=NO	gave a count rate of 353 c/s, background rate ad of the V magnitude (COS.im.467312), it gi rameters for an ACQ/IMAGE ETC run (COS.	The result was COS.im.467283. This gave a count rate of 353 c/s, background rate = 1 c/s, brightest pixel = 49 c/s, count rate over the entire detector = 1394, SNR = 145 in 60 seconds, BUFFER-TIME = 1691. If I use the GALEX NUV Magnitude instead of the V magnitude (COS.im.467312), it gives rate = 220 c/s, brightest pixel = 31, count rate over the entire detector = 1262, SNR = 115 in 60 seconds, BUFFER-TIME = 1691. If I use the GALEX NUV Magnitude instead of the V magnitude (COS.im.467312), it gives rate = 220 c/s, brightest pixel = 31, count rate over entire detector = 1262, SNR = 115 in 60 seconds, BUFFER-TIME = 1869. For completeness, I used the same parameters for an ACQ/IMAGE ETC run (COS.ta.467306) using the V magnitude and got essentially the same results. Category=STAR Description=[F3-F9] Firended=NQ							

	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	PSA ACQ/I	(1) NGC188-41	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				60 Secs (60 Secs)	
		MAGE (COS.ta.467 306)							[==>]	[1]
	Con	nments: Target	1 used in 11469 SMO	VV NUV Focus program.						
	2	Nominal Fo	(1) NGC188-41	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=12			60 Secs (60 Secs)	<b></b>
		e				50; FLASH=YES			[==>]	
		(COS.im.46 7312)								[1]
	Con	nments: Exposu	ire at nominal focus p	osition						
	3	Move Focus	NONE	COS, ALIGN/OSM		FOCUS=-200			0 Secs (0 Secs)	
		10-200 (0)							[==>]	[1]
	Con	nments: Offset t	to focus position							
	4	NUV Expos	(1) NGC188-41	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=12			60 Secs (60 Secs)	
		(COS.im.46				50, FLASH=YES			[==>]	[1]
	Con	7312)								_
	5	Move Focus	NONF	COS ALIGN/OSM		FOCUS=-175			A Secs (A Secs)	1
	5	To -175	NONE	COD, ALIGIVODIN		10005-175			[==>]	[]]
6	Con	(U) 	to forme position						L J	[+]
lre	6	NUV Expos	(1) NGC188-41	COS/NUV_TIME-TAG_PSA	MIRRORA	BUFFER-TIME=12			60 Secs (60 Secs)	
ารต	Ŭ	ure	(1)	005,110 1, 1112 1112,121		50;			[==>]	
, xp		(COS.III.40 7312)				FLASH=YES			• _	[1]
ш	Con	nments: Exposu	ire during focus sweer	)						1
	7	Move Focus	NONE	COS, ALIGN/OSM		FOCUS=-150			0 Secs (0 Secs)	-
		(0)							[==>]	[1]
	Con	nments: Offset t	to focus position							T
	8	NUV Expos	(1) NGC188-41	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=12			60 Secs (60 Secs)	
		(COS.im.46				FLASH=YES			[==>]	[1]
	Con	/312) mants: Exposu	ure during focus sweet	n						
	9	Move Focus	NONE	COS, ALIGN/OSM		FOCUS=-125			0 Secs (0 Secs)	
	-	To -125		000,					[==>]	
	Con	(0) nments: Offset t	to focus position							L-J
	10	NUV Expos	(1) NGC188-41	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=12			60 Secs (60 Secs)	
		ure (COS im 46	. ,			50;			[==>]	
		7312)				FLASH=YES				[1]
	Con	nments: Exposu	ire during focus sweep	<u>,</u>						т
	11	Move Focus To -100	NONE	COS, ALIGN/OSM		FOCUS=-100			0 Secs (0 Secs)	
		(0)							[==>]	[1]
	Con	nments: Offset t	to focus position							

#### 12 NUV Expos (1) NGC188-41 COS/NUV, TIME-TAG, PSA MIRRORA BUFFER-TIME=12 60 Secs (60 Secs) ure 50: [==>](COS.im.46 [1] FLASH=YES 7312) *Comments: Exposure during focus sweep* 13 Move Focus NONE COS, ALIGN/OSM FOCUS=-75 0 Secs (0 Secs) To -75 [==>] [1] (0)Comments: Offset to focus position 14 NUV Expos (1) NGC188-41 COS/NUV, TIME-TAG, PSA MIRRORA BUFFER-TIME=12 60 Secs (60 Secs) 50; ure [==>] (COS.im.46 [1] FLASH=YES 7312) Comments: Exposure during focus sweep 15 Move Focus NONE COS, ALIGN/OSM FOCUS=-50 0 Secs (0 Secs) To -50 [==>] [1] (0)Comments: Offset to focus position 16 NUV Expos (1) NGC188-41 MIRRORA BUFFER-TIME=12 60 Secs (60 Secs) COS/NUV, TIME-TAG, PSA 50; ure [==>] (COS.im.46 [1] FLASH=YES 7312) Comments: Exposure during focus sweep 17 Move Focus NONE COS, ALIGN/OSM FOCUS=-25 0 Secs (0 Secs) To -25 l = > l[1] (0)Comments: Offset to focus position 18 NUV Expos (1) NGC188-41 COS/NUV, TIME-TAG, PSA MIRRORA BUFFER-TIME=12 60 Secs (60 Secs) ure 50; [==>] (COS.im.46 [1] FLASH=YES 7312) Comments: Exposure during focus sweep 19 Move to No NONE COS, ALIGN/OSM FOCUS=0 0 Secs (0 Secs) minal Focus [==>] [1] (0)Comments: Nominal Focus Location 20 NUV Expos (1) NGC188-41 COS/NUV, TIME-TAG, PSA MIRRORA BUFFER-TIME=12 60 Secs (60 Secs) 50; ure [==>] (COS.im.46 [1] FLASH=YES 7312) Comments: Exposure during focus sweep 21 Move Focus NONE COS, ALIGN/OSM FOCUS=25 0 Secs (0 Secs) To +25 [==>] [1] (0)Comments: Offset to focus position 22 NUV Expos (1) NGC188-41 BUFFER-TIME=12 60 Secs (60 Secs) COS/NUV, TIME-TAG, PSA MIRRORA 50; ure [==>] (COS.im.46 [1] FLASH=YES 7312) *Comments: Exposure during focus sweep* 23 Move Focus NONE COS. ALIGN/OSM FOCUS=50 0 Secs (0 Secs) To +50 [==>] [1] (0)Comments: Offset to focus position

#### 24 NUV Expos (1) NGC188-41 COS/NUV, TIME-TAG, PSA MIRRORA BUFFER-TIME=12 60 Secs (60 Secs) ure 50: [==>](COS.im.46 [1] FLASH=YES 7312) *Comments: Exposure during focus sweep* 25 Move Focus NONE COS, ALIGN/OSM FOCUS=75 0 Secs (0 Secs) To +75 [==>] [1] (0)Comments: Offset to focus position 26 NUV Expos (1) NGC188-41 COS/NUV, TIME-TAG, PSA MIRRORA BUFFER-TIME=12 60 Secs (60 Secs) 50; ure [==>] (COS.im.46 [1] FLASH=YES 7312) *Comments: Exposure during focus sweep* 27 Move Focus NONE COS, ALIGN/OSM FOCUS=100 0 Secs (0 Secs) To +100 [==>][1] (0)Comments: Offset to focus position 28 NUV Expos (1) NGC188-41 MIRRORA BUFFER-TIME=12 60 Secs (60 Secs) COS/NUV, TIME-TAG, PSA 50; ure [==>] (COS.im.46 [1] FLASH=YES 7312) Comments: Exposure during focus sweep 29 Move Focus NONE COS, ALIGN/OSM FOCUS=125 0 Secs (0 Secs) To +125 l = > l[1] (0)Comments: Offset to focus position 30 NUV Expos (1) NGC188-41 COS/NUV, TIME-TAG, PSA MIRRORA BUFFER-TIME=12 60 Secs (60 Secs) ure 50; [==>] (COS.im.46 [1] FLASH=YES 7312) Comments: Exposure during focus sweep 31 Move Focus NONE COS, ALIGN/OSM FOCUS=150 0 Secs (0 Secs) To +150 [==>] [1] (0)Comments: Offset to focus position 32 NUV Expos (1) NGC188-41 COS/NUV, TIME-TAG, PSA MIRRORA BUFFER-TIME=12 60 Secs (60 Secs) 50; ure [==>] (COS.im.46 [1] FLASH=YES 7312) Comments: Exposure during focus sweep 33 Move Focus NONE COS, ALIGN/OSM FOCUS=175 0 Secs (0 Secs) To +175 [==>] [1] (0)Comments: Offset to focus position 34 NUV Expos (1) NGC188-41 BUFFER-TIME=12 60 Secs (60 Secs) COS/NUV, TIME-TAG, PSA MIRRORA 50; ure [==>] (COS.im.46 [1] FLASH=YES 7312) *Comments: Exposure during focus sweep* 35 Move Focus NONE COS. ALIGN/OSM FOCUS=200 0 Secs (0 Secs) To +200 [==>] [1] (0)Comments: Offset to focus position

36	NUV Expos (1) NGC188-41	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=12	60 Secs (60 Secs)	
	ure (COS.im.46 7312)			50; FLASH=YES	[==>]	[1]
Con	nments: Exposure during focus swee	p				
37	Move to No NONE	COS, ALIGN/OSM		FOCUS=0	0 Secs (0 Secs)	
	minal Focus (0)			[==>]	[1]	
Con	nments: Back to Nominal Focus Loc	ation				
38	Nominal Fo (1) NGC188-41	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=12	60 Secs (60 Secs)	
	cus Exposur e (COS.im.46 7312)			50; FLASH=YES	[==>]	[2]
Con	nments: Exposure at nominal focus p	position				

Orbit 1 Server Version: 20181130 ••• Exp. 2 Exp. 3 €--) Exp. 4 Exp. 5 ۥ•• Exp. 6 Exp. 7 ••• Exp. 8 Exp. 9 ••• Exp. 10 Exp. 11 ۥ• Exp. 12 Exp. 13 ۥ• Exp. 14 Exp. 15 €--> Exp. 16 Exp. 17 €--> Exp. 18 Exp. 19 €--> Exp. 20 Exp. 21 ۥ• Exp. 22 Exp. 23 **Orbit Structure** €--> Exp. 24 Exp. 25 €--> Exp. 26 Exp. 27 €--> Exp. 28 Exp. 29 €--> Exp. 30 Exp. 31 ۥ• Exp. 32 Exp. 33 €--> Exp. 34 Exp. 35 €--> Exp. 36 Unused Orbital Visibility = 86 Exp. 37 GS Acq Occultation Exp. 1 0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000 sec



	Proposal 13192, NUV Focus Sw	weep: IDK-M002 NUV Contingency (03)			Sat May 04 03:00:33 GMT 2019				
	Diagnostic Status: Warning								
Visit	Scientific Instruments: COS, COS/NUV								
	Special Requirements: SCHED 100%								
	Comments: This is a contingency	y visit which is to be used only if the primary targe	t is unavailable. It is a copy of Visit 01 in Program	m 15681.					
	Note that APT has a spurious wa	urning for focus sweeps: "This visit contains an AL	JGN/OSM exposure which should be preceded by	an FUV science exposure to	o define the starting position				
Diagnostics	(NUV Focus Sweep: IDK-M002 scan.	NUV Contingency (03)) Warning (Form): This v	isit contains an ALIGN/OSM exposure which sho	uld be preceded by an FUV	science exposure to define the starting position for the				
	# Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
ets	(2) IDK-M002	RA: 02 28 49.2574 (37.2052392d)	Proper Motion RA: 11.450 mas/yr	V=15.78	Reference Frame: ICRS				
arg		Dec: -73 43 58.50 (-73.73292d)	Proper Motion Dec: -3.476 mas/yr						
Ĕ		Equinox: J2000	Epoch of Position: 2000						
ed	Comments:								
Ê	Category=STAR Description=[G V-IV]								
	Extended=NO								

#### Label Target Config,Mode,Aperture Spectral Els. **Opt. Params.** Special Reqs. Groups Exp. Time (Total)/[Actual Dur.] Orbit (ETC Run) PSA ACQ/I (2) IDK-M002 GS ACQ SCENARI COS/NUV, ACQ/IMAGE, PSA MIRRORA 60 Secs (60 Secs) O BASE1BE MAGE [==>] (COS.ta.131 [1] 8710) 2 Nominal Fo (2) IDK-M002 COS/NUV, TIME-TAG, PSA MIRRORA BUFFER-TIME=17 255 Secs (255 Secs) cus Exposur 00;[==>] e FLASH=YES [1] (COS.im.13 18716) Comments: Exposure at nominal focus position COS, ALIGN/OSM 3 Move Focus NONE FOCUS=-200 0 Secs (0 Secs) To -200 [==>] [1] (0)Comments: Offset to focus position NUV Expos (2) IDK-M002 COS/NUV, TIME-TAG, PSA BUFFER-TIME=17 255 Secs (255 Secs) 4 MIRRORA 00;ure [==>] (COS.im.13 [1] FLASH=YES 18716) Comments: Exposure during focus sweep Move Focus NONE COS, ALIGN/OSM FOCUS=-150 0 Secs (0 Secs) 5 To -150 [==>][1] (0)Comments: Offset to focus position NUV Expos (2) IDK-M002 COS/NUV, TIME-TAG, PSA MIRRORA BUFFER-TIME=17 255 Secs (255 Secs) Exposures ure 00: [==>] (COS.im.13 [1] FLASH=YES 18716) Comments: Exposure during focus sweep Move Focus NONE COS, ALIGN/OSM FOCUS=-100 0 Secs (0 Secs) To -100 [==>] [1] (0)Comments: Offset to focus position NUV Expos (2) IDK-M002 8 COS/NUV, TIME-TAG, PSA MIRRORA BUFFER-TIME=17 255 Secs (255 Secs) 00; ure [==>] (COS.im.13 [1] FLASH=YES 18716) Comments: Exposure during focus sweep 9 Move Focus NONE COS, ALIGN/OSM FOCUS=-75 0 Secs (0 Secs) To -75 [==>][1] (0)Comments: Offset to focus position 10 NUV Expos (2) IDK-M002 COS/NUV. TIME-TAG. PSA MIRRORA BUFFER-TIME=17 255 Secs (255 Secs) 00: ure [==>] (COS.im.13 [1] FLASH=YES 18716) Comments: Exposure during focus sweep 11 Move Focus NONE COS, ALIGN/OSM FOCUS=-50 0 Secs (0 Secs) To -50 [==>][1] (0)Comments: Offset to focus position

$\begin{array}{c c c c c c c c c c c c c c c c c c c $							
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	12	NUV Expos (2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=17	255 Secs (255 Secs)	
$ \begin{array}{  c   } \hline Commons: Encourse during from sevep \\ \hline $		ure (COS.im.13 18716)			00; FLASH=YES	[==>]	[1]
13       Move Focus NONE       COS, ALIGNOSM       FOCUS=25       Description         14       NUV Expos (2) DK-M002       COS.NUV, TME-TAG, PSA       MIRRORA       BUFFER-TIME=17 $[[==>]]$ $[I]$ 14       NUV Expos (2) DK-M002       COS.NUV, TME-TAG, PSA       MIRRORA       BUFFER-TIME=17 $[[==>]]$ $[I]$ 15       monetable       COS.ALIGNOSM       FOCUS=0       Description $[[==>]]$ $[I]$ 16       NUV Expos (2) DK-M002       COS.ALIGNOSM       FOCUS=0       Description $[[==>]]$ $[I]$ 16       NUV Expos (2) DK-M002       COS.ALIGNOSM       FOCUS=25       Description $[[==>]]$ $[I]$ 17       More Exposure during focus surep       FLASH=YES       I[==>] $[I]$ $[I]$ 16       NUV Expos (2) DK-M002       COS.ALIGNOSM       FOCUS=25       Description $[I]$ <td>Con</td> <td>ments: Exposure during focus sweet</td> <td>2</td> <td></td> <td></td> <td></td> <td></td>	Con	ments: Exposure during focus sweet	2				
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	13	Move Focus NONE	COS, ALIGN/OSM		FOCUS=-25	0 Secs (0 Secs)	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		To -25				[==>]	[1]
I4       NUV Expos (2) IDK-M002       COS.NUV, TIME-TAG, PSA       MIRRORA       BUFFER-TIME=17 $255 \sec(255 \sec)$ $[==>]$ <	Con	nments: Offset to focus position					
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	14	NUV Expos (2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=17	255 Secs (255 Secs)	
$ \begin{array}{  c   } \hline comment: Equating focus sweep \\ \hline 15 Move to No NONE COS, ALIGNOSM \\ \hline 15 Move to No NONE COS, ALIGNOSM \\ \hline 16 MUV Expose (2) IDK-MO02 COS/NUV, TIME-TAG, PSA MIRRORA \\ \hline 16 NUV Expose (2) IDK-M002 COS/NUV, TIME-TAG, PSA MIRRORA \\ \hline 17 Move Focus NONE COS, ALIGNOSM \\ \hline 10 O Comment: Equating focus sweep \\ \hline 17 Move Focus NONE COS, ALIGNOSM \\ \hline 10 O COS III.3 \\ \hline 1871(6) \\ \hline 10 O COS III.3 \\ \hline 1871(6) \\ \hline 10 O COS III.3 \\ \hline 1871(6) \\ \hline 10 O COS III.3 \\ \hline 10 O SC I$		ure (COS.im.13 18716)			00; FLASH=YES	[==>]	[1]
Is       Move to No NONE       COS, ALIGN/OSM       FOCUS=0       0.5ees, 0.9 secs)       1         Initial Freeus (0)       Comments: Costinuity Freeus (COS ini.13)       Entriffee.TIME=17       265 Secs (265 Secs)       1         Is       NUV Expos (2) IDK-M002       COS/NUV, TIME-TAG, PSA       MIRRORA       BUTFFEE.TIME=17       265 Secs (265 Secs)       1         Is       NUV Expos (2) IDK-M002       COS/NUV, TIME-TAG, PSA       MIRRORA       BUTFFEE.TIME=17       1       1         17       Move Focus NONE       COS, ALIGN/OSM       FOCUS=25       0       1 <td>Con</td> <td>nments: Exposure during focus sweep</td> <td>0</td> <td></td> <td></td> <td></td> <td>•</td>	Con	nments: Exposure during focus sweep	0				•
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	15	Move to No NONE	COS, ALIGN/OSM		FOCUS=0	0 Secs (0 Secs)	
Comments: Nominal Focus Location       265 Secs (265 Secs)         16       NUV Expos (2) DK-M002       COS/NUV, TIME-TAG, PSA       MIRRORA       BUFFER-TIME=17       265 Secs (265 Secs)       17         16       NUV Expose (2) DK-M002       COS/NUV, TIME-TAG, PSA       MIRRORA       BUFFER-TIME=17       265 Secs (265 Secs)       17         17       Move Focus NONE       COS/ALIGN/OSM       FOCUS=25       0       0       17		(0) minal Focus				[==>]	[1]
16       NUV Expos       (2) IDK-M002       COS/NUV, TIME-TAG, PSA       MIRRORA       BUFFER-TIME=17 $265 Secs$ ( $265 Secs$ ) $1=>/1$ $12 < 12 < 12 < 12 < 12 < 12 < 12 < 12 <$	Con	nments: Nominal Focus Location					
$\begin{array}{c c} u^{ec} & 00; \\ II = J & II \\ Comments: Exposure during focus sweep \\ \hline II Move Focus NONE \\ To + 25 \\ 0 \\ \hline II = J \\ \hline II \\ II \\ II \\ II \\ II \\ II \\ II $	16	NUV Expos (2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=17	265 Secs (265 Secs)	
Comments: Exposure during focus sweepCOS, ALIGN/OSMFOCUS=25 $0 Sees (0 Sees)$ 17Move Focus NONE To +25COS, ALIGN/OSMFOCUS=25 $0 Sees (0 Sees)$ $[==>]$ 18NUV Expos (2) IDK-M002 (COS/INUV, TIME-TAG, PSA IST16)MIRRORABUFFER-TIME=17 00; FLASH=YES265 Sees (265 Sees) $[==>]$ 19MOVE Focus NONE (0)COS/INUV, TIME-TAG, PSA (0)MIRRORABUFFER-TIME=17 00; FLASH=YES265 Sees (265 Sees) $[==>]$ 19MOVE Focus NONE (0)COS/INUV, TIME-TAG, PSA (0)FOCUS=50 $0 Sees (0 Sees)$ $[==>]$ 20NUV Expos (2) IDK-M002 (COS/INUV, TIME-TAG, PSA (1)MIRRORA (0)BUFFER-TIME=17 (0); FLASH=YES265 Sees (265 Sees) $[==>]$ 20NUV Expos (2) IDK-M002 (COS/INUV, TIME-TAG, PSA (0); (COS/INUV, TIME-TAG, PSA (0);MIRRORA (0); FLASH=YESBUFFER-TIME=17 (2); (2)265 Sees (265 Sees) $[==>]$ 21MOVE Focus NONE 		ure (COS.im.13 18716)			00; FLASH=YES	[==>]	[2]
17Move Focus NONE To +25COS, ALIGN/OSMFOCUS=25 $0 \text{ Secs } (0 \text{ Secs })$ $ z=>j$ $ z $ Comments: Offset to focus position18NUV Expos (2) IDK-M002 ure during focus sweepCOS/NUV, TIME-TAG, PSAMIRRORABUFFER-TIME=17 00; FLASH=YES $265 \text{ Secs } (265 \text{ Secs })$ $ z=>j$ $ z $ 19Move Focus NONE (0)COS/NUV, TIME-TAG, PSAMIRRORABUFFER-TIME=17 00; $ z=>j$ $ z $ $ z $ 20NUV Expos (2) IDK-M002 (0)COS/NUV, TIME-TAG, PSAMIRRORABUFFER-TIME=17 00; 	Con	ments: Exposure during focus sweet	2				
$\begin{bmatrix} T_{0} + 25 \\ (0) \\ \hline Comments: Offset to focus position \\ \hline Is NUV Expos (2) IDK-M002 COS/NUV, TIME-TAG, PSA MIRRORA BUFFER-TIME=17 OC \\ ure (COS.im.13 IST16) \\ \hline Is MONE TO +50 \\ \hline Io +50 \\ (0) \\ \hline Comments: Exposure during focus sweep \\ \hline Io +50 \\ (0) \\ \hline Comments: Offset to focus position \\ \hline Ie => J \\ \hline Io +50 \\ (0) \\ \hline Ie => J \\ \hline Io +50 \\ (0) \\ \hline Ie => J \\ \hline Io +50 \\ (0) \\ \hline Ie => J \\ \hline Io +50 \\ (0) \\ \hline Ie => J \\ \hline Io +50 \\ (0) \\ \hline Ie => J \\ \hline Io +50 \\ \hline Ie => J \\ \hline Io +50 \\ \hline Ie => J \\ \hline Io +50 \\ \hline Ie => J \\ \hline Io +50 \\ \hline I$	17	Move Focus NONE	COS, ALIGN/OSM		FOCUS=25	0 Secs (0 Secs)	
$ \begin{array}{c} \hline Comments: Offset to focus position \\ \hline 18 & NUV Expos (2) DK-M002 & COS/NUV, TIME-TAG, PSA & MIRORA & BUFFER-TIME=17 & 265 Secs (265 Secs) & 1 \\ \hline I = > I & I & I \\ \hline I = > I & I & I \\ \hline I = > I & I & I \\ \hline I = > I & I & I \\ \hline I = > I & I & I \\ \hline I = > I & I & I \\ \hline I = > I & I & I \\ \hline I = > I & I & I \\ \hline I = > I & I & I \\ \hline I = > I & I & I \\ \hline I = > I & I & I \\ \hline I = > I & I & I \\ \hline I = > I & I & I \\ \hline I = > I & I & I \\ \hline I = > I & I & I \\ \hline I = > I & I \\ \hline I$		To +25 (0)				[==>]	[2]
18       NUV Expos (2) IDK-M002       COS/NUV, TIME-TAG, PSA       MIRRORA       BUFFER-TIME=17 $265 \sec(265 \sec)$ $[=>]$ $[2]$ 00:       FLASH=YES $[=>]$ $[2]$ $[2]$ $[2]$ $[2]$ Comments: Exposure during focus sweep         19       Move Focus NONE       COS, ALIGN/OSM       FOCUS=50 $[=>]$ $[=>]$ $[2]$ Comments: Offset to focus position         20       NUV Expos (2) IDK-M002       COS/NUV, TIME-TAG, PSA       MIRRORA       BUFFER-TIME=17 $[265 Secs (265 Secs)]$ $[=>]$ $[2]$ OCOS in13         18716)       265 Secs (0 Secs) $[=>]$ $[2]$ Comments: Exposure during focus sweep         21       Move Focus NONE       COS, ALIGN/OSM       FOCUS=75 $[=>]$ $[2]$ Comments: Exposure during focus sweep         22       NUV Expos (2) IDK-M002       COS/NUV, TIME-TAG, PSA       MIRRORA       BUFFER-TIME=17 $[2]$ $[2]$ (COS in13         18716)       Deces (0 Secs) $[=>]$ $[=>]$ $[2]$ Comments	Con	nments: Offset to focus position					
$\begin{bmatrix} cost, m.13 \\ 18716 \end{pmatrix} = FLASH=YES \\ \hline FLASH=YES \\ \hline \\ \hline \\ Comments: Exposure during focus sweep \\ \hline \\ $	18	NUV Expos (2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=17	265 Secs (265 Secs)	
Comments: Exposure during focus sweep       COS, ALIGN/OSM       FOCUS=50       0 Secs. (0 Secs.)       1         19       Move Focus NONE (0)       COS, ALIGN/OSM       FOCUS=50 $ [==>]       [2]         Comments: Offset to focus position         [==>]       [2]         20       NUV Expos (2) IDK-M002       COS/NUV, TIME-TAG, PSA       MIRRORA       BUFFER-TIME=1700;       265 Secs. (265 Secs.)       []         20       NUV Expos (2) IDK-M002       COS/NUV, TIME-TAG, PSA       MIRRORA       BUFFER-TIME=1700;       []       []         COmments: Exposure during focus sweep         []       []       []       []         Comments: Exposure during focus sweep         Secs. (0 Secs.)       []       []       []         Comments: Offset to focus position         FOCUS=75       0 Secs. (0 Secs.)       []       $		(COS.im.13 18716)			FLASH=YES	[==>]	[2]
19Move Focus NONE To +50 (0)COS, ALIGN/OSMFOCUS=50 $0.8ecs (0.8ecs)$ $ => 12Comments: Offset to focus position[=>][2]20NUV Expos (2) IDK-M002ure(COS.im.13)1871(6)COS/NUV, TIME-TAG, PSA(0)MIRORA(0)BUFFER-TIME=17(0)265 Secs (265 Secs)[2]Comments: Exposure during focus sweep[=>][2][2]Comments: COS, ALIGN/OSM(0)FOCUS=750 Secs (0 Secs)[2]Comments: Offset to focus position[=>][2][2]Comments: Offset to focus positionE[=>][2]21NUV Expos (2) IDK-M002(0)COS/NUV, TIME-TAG, PSA(0)MIRORA(0)BUFFER-TIME=17(0);FLASH=YES265 Secs (265 Secs)22NUV Expos (2) IDK-M002(COS.im.13)18716)COS/NUV, TIME-TAG, PSA(COS.im.13)18716)MIRORAFLASH=YESBUFFER-TIME=17(0);FLASH=YES[=>]23Move Focus NONETo +100(0)COS, ALIGN/OSM(COS, ALIGN/OSM(1==>]FOCUS=100[=>][2]24MOVE focus NONETo +100(0)COS, ALIGN/OSM(2) IDK-M002D Secs (0 Secs)(2) IDK-M002[2]24Move Focus NONETo +100(0)COS, ALIGN/OSM(2) IDK-M002D Secs (0 Secs)[2]25Secs (0 Secs)(2) IDK-M002[2][2][2]26Secs (0 Secs)[2][2]27III State focus focus sweep[2][2][2]28Seco (0 Secs)[2][2][2]$	Con	nments: Exposure during focus sweep	0				
$\begin{bmatrix}  z  > 0 \\ 0 \end{bmatrix} \begin{bmatrix}  z  > 0 \\  z  > 0 \end{bmatrix} \begin{bmatrix}  z  > $	19	Move Focus NONE	COS, ALIGN/OSM		FOCUS=50	0 Secs (0 Secs)	
Comments: Offset to focus position       20       NUV Expos (2) IDK-M002       COS/NUV, TIME-TAG, PSA       MIRRORA       BUFFER-TIME=17 00; FLASH=YES       265 Secs (265 Secs)       1         20       NUV Expos (2) IDK-M002 (COS, in.13) 18716)       COS/NUV, TIME-TAG, PSA       MIRRORA       BUFFER-TIME=17 00; FLASH=YES       265 Secs (265 Secs)       1         21       Move Focus NONE (0)       COS, ALIGN/OSM       FOCUS=75       0 Secs (0 Secs)       1         22       NUV Expos (2) IDK-M002 (COS, in.13) 18716)       COS/NUV, TIME-TAG, PSA       MIRRORA       BUFFER-TIME=17 00; FLASH=YES       265 Secs (265 Secs)       1         23       MOVE Exposure during focus sweep       COS, ALIGN/OSM       FOCUS=100       0 Secs (0 Secs)       1         23       Move Focus NONE To +100 (0)       COS, ALIGN/OSM       FOCUS=100       0 Secs (0 Secs)       1         20       Off out for out in       COS, ALIGN/OSM       FOCUS=100       0 Secs (0 Secs)       1		(0)				[==>]	[2]
20NUV Expos (2) IDK-M002COS/NUV, TIME-TAG, PSAMIRRORABUFFER-TIME=17 00; FLASH=YES265 Secs (265 Secs) $(COS.im.13)$ 18716) $FLASH=YES$ $[==>]$ $[2,$ Comments: Exposure during focus sweep $COS, ALIGN/OSM$ FOCUS=75 $0$ Secs (0 Secs) $[==>]$ 20NUV Expos (2) IDK-M002 (0)COS/NUV, TIME-TAG, PSAMIRRORABUFFER-TIME=17 00; FLASH=YES $0$ Secs (0 Secs) $[==>]$ 20NUV Expos (2) IDK-M002 (COS.im.13) 18716)COS/NUV, TIME-TAG, PSAMIRRORABUFFER-TIME=17 00; FLASH=YES $265$ Secs (265 Secs) $[==>]$ 20MOVE Expos (2) IDK-M002 (COS.im.13) 18716)COS/NUV, TIME-TAG, PSAMIRRORABUFFER-TIME=17 00; FLASH=YES $[==>]$ $[==>]$ 23Move Focus NONE To +100 (0)COS, ALIGN/OSMFOCUS=100 $0$ Secs (0 Secs) $[==>]$ 20Move focus NONE To +100 (0)COS, ALIGN/OSMFOCUS=100 $0$ Secs (0 Secs) $[==>]$ 25Comments: for the focus notion $[==>]$ $[2]$	Con	nments: Offset to focus position					
$\begin{bmatrix} 1 & 00, \\ FLASH=YES \\ \hline \\ \hline \\ COstim.13 \\ 18716 \\ \hline \\ Comments: Exposure during focus sweep \\ \hline \\ \hline \\ \hline \\ To +75 \\ (0) \\ \hline \\ \hline \\ Comments: Offset to focus position \\ \hline \\ \hline \\ \hline \\ Comments: Offset to focus position \\ \hline \\ \hline \\ \hline \\ \hline \\ Comments: Offset to focus position \\ \hline \\ \hline \\ \hline \\ \hline \\ Comments: Offset to focus position \\ \hline \\ $	20	NUV Expos (2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=17	265 Secs (265 Secs)	
Comments: Exposure during focus sweep         21       Move Focus NONE To +75 (0)       COS, ALIGN/OSM       FOCUS=75       0 Secs (0 Secs)       1         20       NUV Expos (2) IDK-M002 ure (COS, im.13 18716)       COS/NUV, TIME-TAG, PSA       MIRRORA       BUFFER-TIME=17 00; FLASH=YES       265 Secs (265 Secs)       1         23       Move Focus NONE To +100 (0)       COS, ALIGN/OSM       FOCUS=100       0 Secs (0 Secs)       1         23       Move Focus NONE To +100 (0)       COS, ALIGN/OSM       FOCUS=100       0 Secs (0 Secs)       1         20       COMMENTATION INTERCOMPTION INTER		(COS.im.13 18716)			FLASH=YES	[==>]	[2]
$\begin{array}{c c} 21 & \text{Move Focus NONE} \\ \hline \text{To +75} \\ (0) \end{array} & \begin{array}{c} \text{COS, ALIGN/OSM} \end{array} & \begin{array}{c} \text{FOCUS=75} \\ \hline \text{DOCUS=75} \end{array} & \begin{array}{c} 0 & \text{Secs (0 Secs)} \\ \hline $	Con	nments: Exposure during focus sweep	0				
$\begin{bmatrix} 10 + 75 \\ (0) \end{bmatrix}$ $\begin{bmatrix} l = > J \end{bmatrix}$ $\begin{bmatrix} l = S \end{bmatrix}$ $\begin{bmatrix} l = $	21	Move Focus NONE	COS, ALIGN/OSM		FOCUS=75	0 Secs (0 Secs)	
Comments: Offset to focus position         22       NUV Expos (2) IDK-M002       COS/NUV, TIME-TAG, PSA       MIRRORA       BUFFER-TIME=17 00; FLASH=YES $265 \text{ Secs } (265 \text{ Secs })$ $[==>J]$ $[2]$ 23       Move Focus       NONE To +100 (0)       COS, ALIGN/OSM       FOCUS=100 $0 \text{ Secs } (0 \text{ Secs })$ $[==>J]$ $[2]$		(0)				[==>]	[2]
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Con	nments: Offset to focus position					
$\begin{bmatrix} ure & 00; \\ (COS.im.13 \\ 18716 \end{pmatrix} & FLASH=YES \\ \hline \\ \hline \\ Comments: Exposure during focus sweep \\ \hline \\ \hline \\ 23 & Move Focus & NONE & COS, ALIGN/OSM & FOCUS=100 & \hline \\ \hline \\ To +100 & 0 & \hline \\ \hline \\ (0) & I & I & I & I \\ \hline \\$	22	NUV Expos (2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=17	265 Secs (265 Secs)	
Comments: Exposure during focus sweep         23       Move Focus       NONE       COS, ALIGN/OSM       FOCUS=100       0 Secs (0 Secs) $[==>]$ [2]         (0)       (0)       (0)       [2]       [2]       [2]		ure (COS.im.13 18716)			00; FLASH=YES	[==>]	[2]
$\begin{array}{c c} 23 & \text{Move Focus NONE} \\ To +100 \\ (0) \\ \end{array} & \begin{array}{c} 0 & \text{Secs (0 Secs)} \\ \hline [==>] & \hline [2] \\ \end{array} \end{array}$	Con	nments: Exposure during focus sweep	D				
$\begin{bmatrix} 10 + 100 \\ 0 \end{bmatrix}$ $\begin{bmatrix} l = > l \end{bmatrix}$ $\begin{bmatrix} l = > l \end{bmatrix}$	23	Move Focus NONE	COS, ALIGN/OSM		FOCUS=100	0 Secs (0 Secs)	
	1	10 + 100 (0)				[==>]	[2]
Comments: Offset to focus position	Con	nments: Offset to focus position					

0.4			MIDDODA			
24	NUV Expos (2) IDK-M002 ure	COS/NUV, HME-TAG, PSA	MIRRORA	BOFFER-IIME=1/ 00:	265 Secs (265 Secs)	-
	(COS.im.13 18716)			FLASH=YES	[==>]	[2]
Con	ments: Exposure during focus swee	ер				
25	Move Focus NONE	COS, ALIGN/OSM		FOCUS=125	0 Secs (0 Secs)	
	To +125 (0)				[==>]	[2]
Con	ments: Offset to focus position					
26	NUV Expos (2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=17	265 Secs (265 Secs)	
1	ure (COS im 13			00;	[==>]	[2]
1	18716)			FLASH=YES		[2]
Con	ments: Exposure during focus swee	ер				
27	Move Focus NONE	COS, ALIGN/OSM		FOCUS=150	0 Secs (0 Secs)	
	10 + 150 (0)				[==>]	[2]
Con	ments: Offset to focus position					
28	NUV Expos (2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=17	265 Secs (265 Secs)	
	ure (COS im 13			00;	[==>]	[2]
	18716)			FLASH=YES		[2]
Con	ments: Exposure during focus swee	ер				
29	Move Focus NONE	COS, ALIGN/OSM		FOCUS=175	0 Secs (0 Secs)	
	10 + 1/5 (0)				[==>]	[2]
Con	ments: Offset to focus position					
30	NUV Expos (2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=17	265 Secs (265 Secs)	
	ure (COS im 13			00;	[==>]	(2)
	18716)			FLASH=YES		[3]
Con	ments: Exposure during focus swee	ер			T	
31	Move Focus NONE	COS, ALIGN/OSM		FOCUS=200	0 Secs (0 Secs)	
	(0)				[==>]	[3]
Con	ments: Offset to focus position					
32	NUV Expos (2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=17	265 Secs (265 Secs)	
	ure (COS.im.13			00;	[==>]	[3]
	18716)			FLASH=YES		[5]
Con	ments: Exposure during focus swee	ep				
33	Move Focus NONE	COS, ALIGN/OSM		FOCUS=250	0 Secs (0 Secs)	
	(0)				[==>]	[3]
Con	ments: Offset to focus position					
34	NUV Expos (2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=17	265 Secs (265 Secs)	_
	ure (COS.im.13			00;	[==>]	[3]
	18716)			FLASH=TES		[5]
Con	ments: Exposure during focus swee	ер				
35	Move Focus NONE	COS, ALIGN/OSM		FOCUS=300	0 Secs (0 Secs)	
ł	(0)				[==>]	[3]
Con	ments: Offset to focus position					
1						

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36	NUV Expos (2) IDK-M00	2 COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=17	265 Secs (265 Secs)	
	ure			00;	[==>]	
	(COS.im.13 18716)			FLASH=YES		[3]
Cor	nments: Exposure during focu	is sweep				
37	Move Focus NONE	COS, ALIGN/OSM		FOCUS=350	0 Secs (0 Secs)	
	To +350 (0)				[==>]	[3]
Cor	nments: Offset to focus positio	on				
38	NUV Expos (2) IDK-M00	2 COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=17	265 Secs (265 Secs)	
	ure (COS im 13			00;	[==>]	(2)
	18716)			FLASH=YES		[3]
Cor	nments: Exposure during focu	is sweep				
39	Move Focus NONE	COS, ALIGN/OSM		FOCUS=400	0 Secs (0 Secs)	
	To +400 (0)				[==>]	[3]
Con	nments: Offset to focus positio	on				
40	NUV Expos (2) IDK-M00	2 COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=17 00;	265 Secs (265 Secs)	
	ure (COS im 12				[==>]	607
	18716)			FLASH=YES		[3]
Con	nments: Exposure during focu	is sweep				
41	Move to No NONE	COS, ALIGN/OSM		FOCUS=0	0 Secs (0 Secs)	
	minal Focus (0)				[==>]	[3]
Cor	nments: Back to Nominal Foc	us Location				
42	Nominal Fo (2) IDK-M00	2 COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=17	265 Secs (265 Secs)	
	cus Exposur			00; FLASH=YES	[==>1	
	e (COS.im.13 18716)	e (COS.im.13 18716)				[3]
Cor	nments: Exposure at nominal	focus position				





![](_page_21_Figure_1.jpeg)