13192 - COS Side 2 Initial NUV Channel Checkout

Cycle: 32, 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	NONE WAVE	COS COS/NUV	1	16-Dec-2024 10:00:25.0	yes
02	(1) NGC188-41 NONE	COS COS/NUV	1	16-Dec-2024 10:00:29.0	yes
03	(2) IDK-M002 NONE	COS COS/NUV	3	16-Dec-2024 10:00:34.0	yes

5 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 aperturewill be checked using the internal wavecal lamp, and an NUV focus run will be made to verify that the focus has not changed.

OBSERVING DESCRIPTION

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

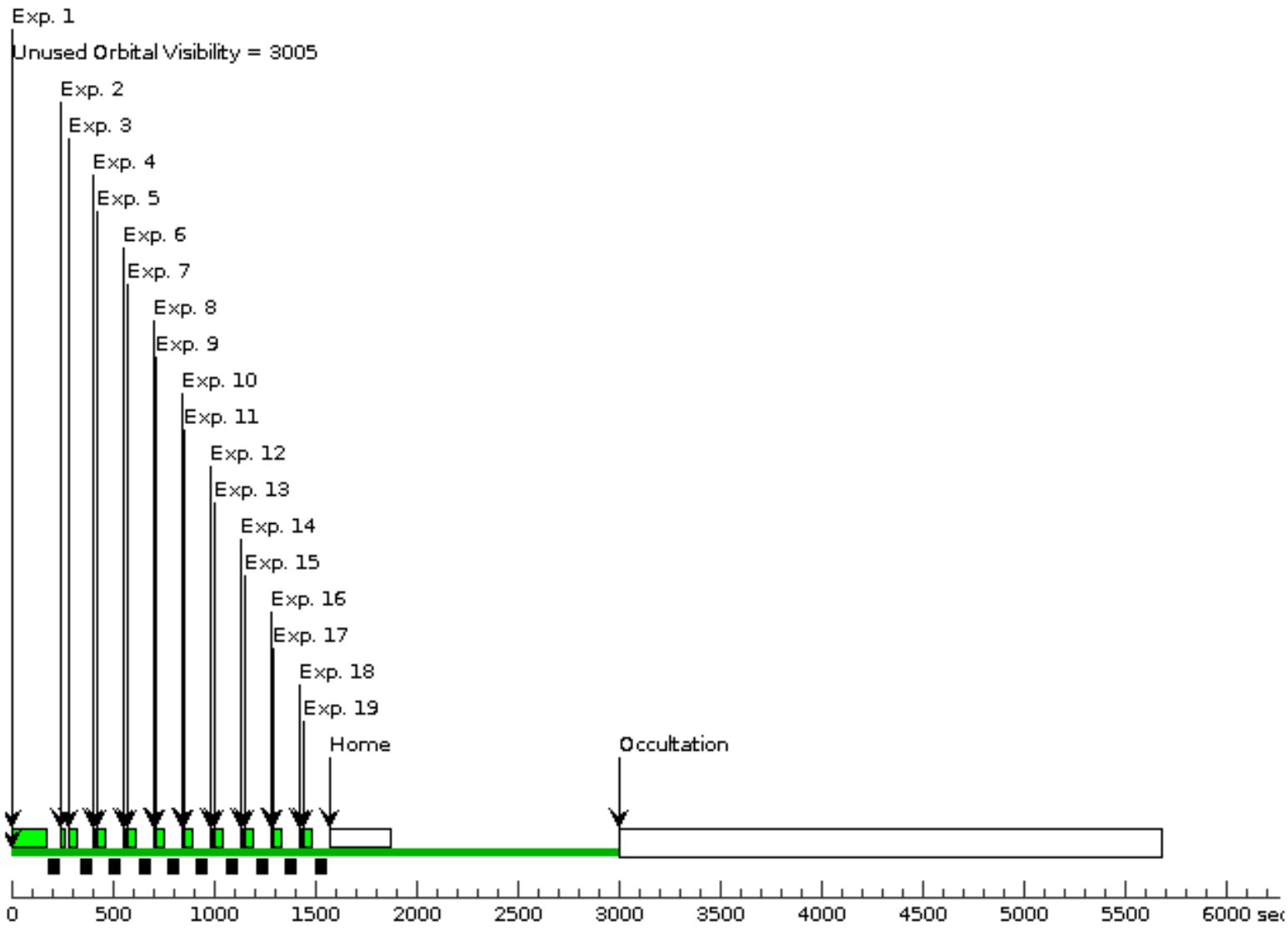
Visit	**Proposal 13192, Wavecal Exposures (01), implementation** Mon Dec 16 15:00:35 GMT 2024 **Diagnostic Status: Warning** Scientific Instruments: COS, COS/NUV Special Requirements: (none) *Comments: This visit will verify that the aperture is in the right location, and will collect exposures at several 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 VISIT

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Wavecal	WAVE	COS/NUV, TIME-TAG, WCA	MIRRORA				30 Secs (30 Secs)	
								[==>]	***[1]***
Comments: NUV Exposure at nominal position.									
Same exposure time as Program 12424									
2	Aperture at (-0.5,-0.5)	NONE	COS, ALIGN/APER		YAPER=-10; XAPER=10.			0 Secs (0 Secs)	
								[==>]	***[1]***
Comments: Aperture moved to approximately (-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).									
3	Wavecal	WAVE	COS/NUV, TIME-TAG, WCA	MIRRORA				30 Secs (30 Secs)	
								[==>]	***[1]***
Comments: NUV Exposure at offset position.									
4	Aperture at (-0.5,+0.0)	NONE	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).									
5	Wavecal	WAVE	COS/NUV, TIME-TAG, WCA	MIRRORA				30 Secs (30 Secs)	
								[==>]	***[1]***
Comments: NUV Exposure at offset position.									
6	Aperture at (-0.5,+0.5)	NONE	COS, ALIGN/APER		YAPER=-10; XAPER=-10.			0 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).									
7	Wavecal	WAVE	COS/NUV, TIME-TAG, WCA	MIRRORA				30 Secs (30 Secs)	
								[==>]	***[1]***
Comments: NUV Exposure at offset position.									
8	Aperture at (+0.0,+0.5)	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).									
9	Wavecal	WAVE	COS/NUV, TIME-TAG, WCA	MIRRORA				30 Secs (30 Secs)	
								[==>]	***[1]***
Comments: NUV Exposure at offset position.									
10	Aperture at (+0.5,+0.5)	NONE	COS, ALIGN/APER		YAPER=10; XAPER=-10.			0 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).									
11	Wavecal	WAVE	COS/NUV, TIME-TAG, WCA	MIRRORA				30 Secs (30 Secs)	
								[==>]	***[1]***
Comments: NUV Exposure at offset position.									
12	Aperture at (+0.5,+0.0)	NONE	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).									
13	Wavecal	WAVE	COS/NUV, TIME-TAG, WCA	MIRRORA				30 Secs (30 Secs)	
								[==>]	***[1]***
Comments: NUV Exposure at offset position.									
14	Aperture at (+0.5,-0.5)	NONE	COS, ALIGN/APER		YAPER=10; XAPER=10.			0 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).									

15	Wavecal	WAVE	COS/NUV, TIME-TAG, WCA	MIRRORA		30 Secs (30 Secs) *[==>]*	 ***[1]***
Comments: NUV Exposure at offset position.							
16	Aperture at (+0.0,-0.5)	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).							
17	Wavecal	WAVE	COS/NUV, TIME-TAG, WCA	MIRRORA		30 Secs (30 Secs) *[==>]*	 ***[1]***
Comments: NUV Exposure at offset position.							
18	Aperture bac k to (0.0,0.0)	NONE	COS, ALIGN/APER		YAPER=0; XAPER=0	0 Secs (0 Secs) *[==>]*	 ***[1]***
Comments: Move aperture back to nominal position							
19	Wavecal	WAVE	COS/NUV, TIME-TAG, WCA	MIRRORA		30 Secs (30 Secs) *[==>]*	 ***[1]***
Comments: NUV Exposure at nominal position.							

Orbit Structure



Visit

Proposal 13192, NUV Focus Sweep: NGC188-41 (02), implementation Mon Dec 16 15:00:35 GMT 2024

Diagnostic Status: Warning

Scientific Instruments: COS, COS/NUV

Special Requirements: SCHED 100%

Comments: This visit will test the NUV ACQ/IMAGE to verify that it works. It will also do a fine focus sweep modeled on Program 11469 Visit 94. From ISR 2010-04, the PSF FWHM should change by a factor of two or so over a +/-200 step range.

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 for focus sweeps: "This visit contains an ALIGN/OSM exposure which should be preceded by an FUV science exposure to define the starting position for the scan."

Diagnostics

(NUV Focus Sweep: NGC188-41 (02)) Warning (Form): This visit contains an ALIGN/OSM exposure which should be preceded by an FUV science exposure to define the starting position for the scan.

Fixed Targets

#	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: ICRS
	Alt Name1: VID-1316-ZZZZ-PLATE	Dec: +85 17 28.85 (85.29135d)	Proper Motion Dec: -0.013 arcsec/yr	B-V=0.46 Galex NUV Flux=149 ; Galex NUV mag=18.47 E(B-V)=0.089; (B-V)intrinsic = 0.37	
		Equinox: J2000	Epoch of Position: 2000		

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

GALEX NUV flux = 149.11 +/-8.6975

GALEX NUV mag 18.4662 +/- 0.0633

actual coordinates used from GSC1 plate ZZZZ courtesy Matt Lallo

proper motion from plate ZZZZ (and Matt Lallo) assumption is values in supporting table are sec time per year and sec arc per year

This target is on NGC-188 GSC1 special astrometric plate ZZZZ and has astrometric coordinates. This star is star 41 on special plate ZZZZ. See above comment about proper motion. Keyes and Lallo have inspected plate ZZZZ and Lallo determined (25 June 2008) that there are numerous available potential guide stars for this target.

Using the above information, the ETC 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 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 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]
Extended=NO

Exposures

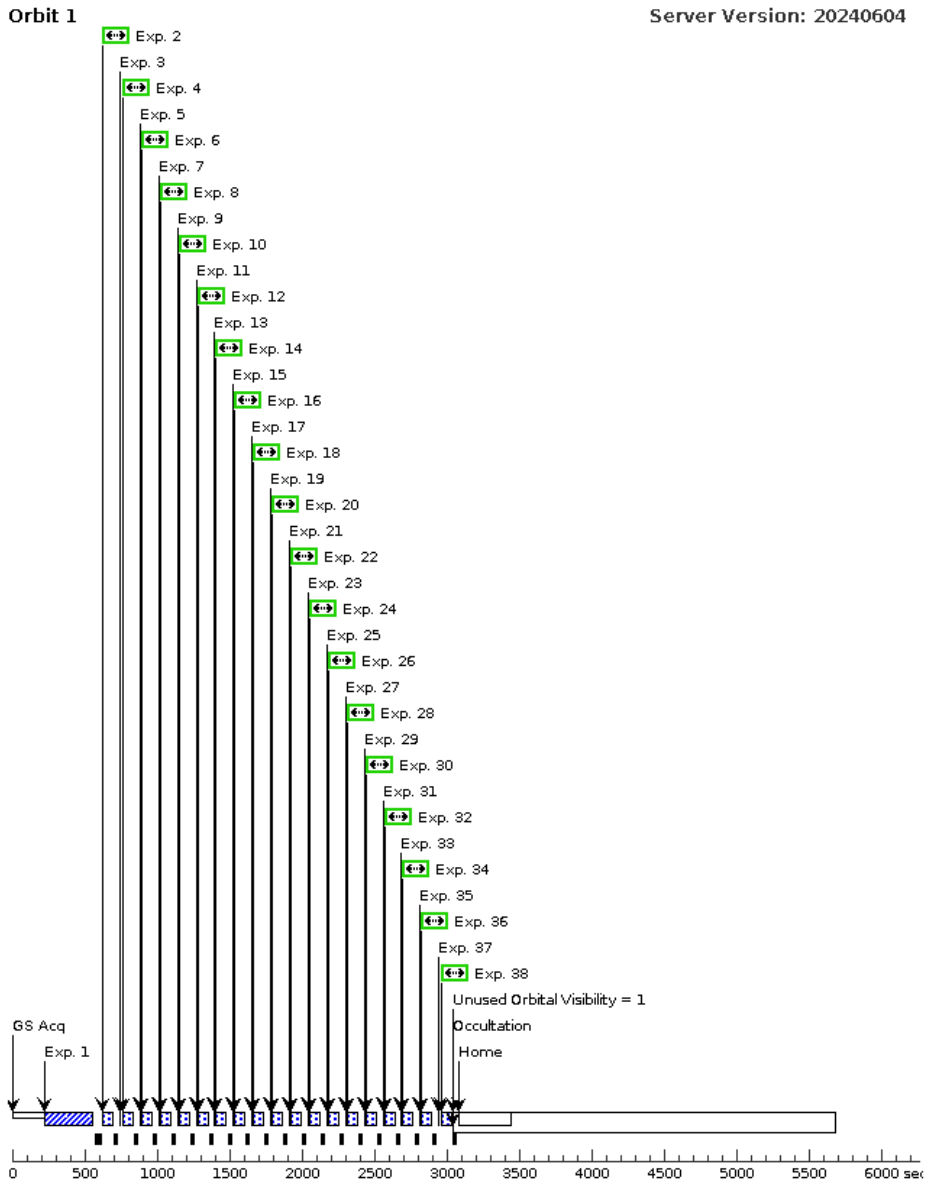
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	PSA ACQ/IMAGE (COS.ta.467306)	(1) NGC188-41	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				60 Secs (60 Secs) *[==>]*	*[1]*
Comments: Target 1 used in 11469 SMOV NUV Focus program.									
2	Nominal Focus Exposure (COS.im.467312)	(1) NGC188-41	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1250; FLASH=YES			53 Secs (53 Secs) *[==>]*	*[1]*
Comments: Exposure at nominal focus position									
3	Move Focus To -200 (0)	NONE	COS, ALIGN/OSM		FOCUS=-200			0 Secs (0 Secs) *[==>]*	*[1]*
Comments: Offset to focus position									
4	NUV Exposure (COS.im.467312)	(1) NGC188-41	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1250; FLASH=YES			54 Secs (54 Secs) *[==>]*	*[1]*
Comments: Exposure during focus sweep									
5	Move Focus To -175 (0)	NONE	COS, ALIGN/OSM		FOCUS=-175			0 Secs (0 Secs) *[==>]*	*[1]*
Comments: Offset to focus position									
6	NUV Exposure (COS.im.467312)	(1) NGC188-41	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1250; FLASH=YES			54 Secs (54 Secs) *[==>]*	*[1]*
Comments: Exposure during focus sweep									
7	Move Focus To -150 (0)	NONE	COS, ALIGN/OSM		FOCUS=-150			0 Secs (0 Secs) *[==>]*	*[1]*
Comments: Offset to focus position									
8	NUV Exposure (COS.im.467312)	(1) NGC188-41	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1250; FLASH=YES			54 Secs (54 Secs) *[==>]*	*[1]*
Comments: Exposure during focus sweep									
9	Move Focus To -125 (0)	NONE	COS, ALIGN/OSM		FOCUS=-125			0 Secs (0 Secs) *[==>]*	*[1]*
Comments: Offset to focus position									
10	NUV Exposure (COS.im.467312)	(1) NGC188-41	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1250; FLASH=YES			54 Secs (54 Secs) *[==>]*	*[1]*
Comments: Exposure during focus sweep									
11	Move Focus To -100 (0)	NONE	COS, ALIGN/OSM		FOCUS=-100			0 Secs (0 Secs) *[==>]*	*[1]*
Comments: Offset to focus position									

12	NUV Exposure (COS.im.467312)	(1) NGC188-41	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1250; FLASH=YES	54 Secs (54 Secs) *[==>]*		***[1]***
Comments: Exposure during focus sweep								
13	Move Focus To -75 (0)	NONE	COS, ALIGN/OSM		FOCUS=-75	0 Secs (0 Secs) *[==>]*		***[1]***
Comments: Offset to focus position								
14	NUV Exposure (COS.im.467312)	(1) NGC188-41	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1250; FLASH=YES	54 Secs (54 Secs) *[==>]*		***[1]***
Comments: Exposure during focus sweep								
15	Move Focus To -50 (0)	NONE	COS, ALIGN/OSM		FOCUS=-50	0 Secs (0 Secs) *[==>]*		***[1]***
Comments: Offset to focus position								
16	NUV Exposure (COS.im.467312)	(1) NGC188-41	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1250; FLASH=YES	54 Secs (54 Secs) *[==>]*		***[1]***
Comments: Exposure during focus sweep								
17	Move Focus To -25 (0)	NONE	COS, ALIGN/OSM		FOCUS=-25	0 Secs (0 Secs) *[==>]*		***[1]***
Comments: Offset to focus position								
18	NUV Exposure (COS.im.467312)	(1) NGC188-41	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1250; FLASH=YES	54 Secs (54 Secs) *[==>]*		***[1]***
Comments: Exposure during focus sweep								
19	Move to Nominal Focus (0)	NONE	COS, ALIGN/OSM		FOCUS=0	0 Secs (0 Secs) *[==>]*		***[1]***
Comments: Nominal Focus Location								
20	NUV Exposure (COS.im.467312)	(1) NGC188-41	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1250; FLASH=YES	54 Secs (54 Secs) *[==>]*		***[1]***
Comments: Exposure during focus sweep								
21	Move Focus To +25 (0)	NONE	COS, ALIGN/OSM		FOCUS=25	0 Secs (0 Secs) *[==>]*		***[1]***
Comments: Offset to focus position								
22	NUV Exposure (COS.im.467312)	(1) NGC188-41	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1250; FLASH=YES	54 Secs (54 Secs) *[==>]*		***[1]***
Comments: Exposure during focus sweep								
23	Move Focus To +50 (0)	NONE	COS, ALIGN/OSM		FOCUS=50	0 Secs (0 Secs) *[==>]*		***[1]***
Comments: Offset to focus position								

24	NUV Exposure (COS.im.467312)	(1) NGC188-41	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1250; FLASH=YES	54 Secs (54 Secs) *[==>]*	***[1]***
Comments: Exposure during focus sweep							
25	Move Focus To +75 (0)	NONE	COS, ALIGN/OSM		FOCUS=75	0 Secs (0 Secs) *[==>]*	***[1]***
Comments: Offset to focus position							
26	NUV Exposure (COS.im.467312)	(1) NGC188-41	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1250; FLASH=YES	54 Secs (54 Secs) *[==>]*	***[1]***
Comments: Exposure during focus sweep							
27	Move Focus To +100 (0)	NONE	COS, ALIGN/OSM		FOCUS=100	0 Secs (0 Secs) *[==>]*	***[1]***
Comments: Offset to focus position							
28	NUV Exposure (COS.im.467312)	(1) NGC188-41	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1250; FLASH=YES	54 Secs (54 Secs) *[==>]*	***[1]***
Comments: Exposure during focus sweep							
29	Move Focus To +125 (0)	NONE	COS, ALIGN/OSM		FOCUS=125	0 Secs (0 Secs) *[==>]*	***[1]***
Comments: Offset to focus position							
30	NUV Exposure (COS.im.467312)	(1) NGC188-41	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1250; FLASH=YES	54 Secs (54 Secs) *[==>]*	***[1]***
Comments: Exposure during focus sweep							
31	Move Focus To +150 (0)	NONE	COS, ALIGN/OSM		FOCUS=150	0 Secs (0 Secs) *[==>]*	***[1]***
Comments: Offset to focus position							
32	NUV Exposure (COS.im.467312)	(1) NGC188-41	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1250; FLASH=YES	54 Secs (54 Secs) *[==>]*	***[1]***
Comments: Exposure during focus sweep							
33	Move Focus To +175 (0)	NONE	COS, ALIGN/OSM		FOCUS=175	0 Secs (0 Secs) *[==>]*	***[1]***
Comments: Offset to focus position							
34	NUV Exposure (COS.im.467312)	(1) NGC188-41	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1250; FLASH=YES	54 Secs (54 Secs) *[==>]*	***[1]***
Comments: Exposure during focus sweep							
35	Move Focus To +200 (0)	NONE	COS, ALIGN/OSM		FOCUS=200	0 Secs (0 Secs) *[==>]*	***[1]***
Comments: Offset to focus position							

	36	NUV Exposure (COS.im.467312)	(1) NGC188-41	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1250; FLASH=YES	54 Secs (54 Secs) *[==>]*	***[1]***
		Comments: Exposure during focus sweep						
	37	Move to Nominal Focus (0)	NONE	COS, ALIGN/OSM		FOCUS=0	0 Secs (0 Secs) *[==>]*	***[1]***
		Comments: Back to Nominal Focus Location						
	38	Nominal Focus Exposure (COS.im.467312)	(1) NGC188-41	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1250; FLASH=YES	53 Secs (53 Secs) *[==>]*	***[1]***
		Comments: Exposure at nominal focus position						

Orbit Structure



Visit

Proposal 13192, NUV Focus Sweep: IDK-M002 NUV Contingency (03), implementation Mon Dec 16 15:00:35 GMT 2024

Diagnostic Status: Warning

Scientific Instruments: COS, COS/NUV

Special Requirements: SCHED 100%

Comments: This is a contingency visit which is to be used only if the primary target is unavailable. It is a copy of Visit 01 in Program 15681.

Note that APT has a spurious warning for focus sweeps: "This visit contains an ALIGN/OSM exposure which should be preceded by an FUV science exposure to define the starting position

Diagnostics

(NUV Focus Sweep: IDK-M002 NUV Contingency (03)) Warning (Form): This visit contains an ALIGN/OSM exposure which should be preceded by an FUV science exposure to define the starting position for the scan.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	IDK-M002	RA: 02 28 49.2574 (37.2052392d)	Proper Motion RA: 11.450 mas/yr	V=15.78	Reference Frame: ICRS
		Dec: -73 43 58.50 (-73.73292d)	Proper Motion Dec: -3.476 mas/yr		
		Equinox: J2000	Epoch of Position: 2000		

Comments:
Category=STAR
Description=[G V-IV]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	PSA ACQ/IMAGE (COS.ta.1318710)	(2) IDK-M002	COS/NUV, ACQ/IMAGE, PSA	MIRRORA		GS ACQ SCENARIO BASE1O3		60 Secs (60 Secs) *[==>]*	*[1]*
2	Nominal Focus Exposure (COS.im.1318716)	(2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1700; FLASH=YES			255 Secs (255 Secs) *[==>]*	*[1]*
Comments: Exposure at nominal focus position									
3	Move Focus To -200 (0)	NONE	COS, ALIGN/OSM		FOCUS=-200			0 Secs (0 Secs) *[==>]*	*[1]*
Comments: Offset to focus position									
4	NUV Exposure (COS.im.1318716)	(2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1700; FLASH=YES			255 Secs (255 Secs) *[==>]*	*[1]*
Comments: Exposure during focus sweep									
5	Move Focus To -150 (0)	NONE	COS, ALIGN/OSM		FOCUS=-150			0 Secs (0 Secs) *[==>]*	*[1]*
Comments: Offset to focus position									
6	NUV Exposure (COS.im.1318716)	(2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1700; FLASH=YES			255 Secs (255 Secs) *[==>]*	*[1]*
Comments: Exposure during focus sweep									
7	Move Focus To -100 (0)	NONE	COS, ALIGN/OSM		FOCUS=-100			0 Secs (0 Secs) *[==>]*	*[1]*
Comments: Offset to focus position									
8	NUV Exposure (COS.im.1318716)	(2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1700; FLASH=YES			255 Secs (255 Secs) *[==>]*	*[1]*
Comments: Exposure during focus sweep									
9	Move Focus To -75 (0)	NONE	COS, ALIGN/OSM		FOCUS=-75			0 Secs (0 Secs) *[==>]*	*[1]*
Comments: Offset to focus position									
10	NUV Exposure (COS.im.1318716)	(2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1700; FLASH=YES			255 Secs (255 Secs) *[==>]*	*[1]*
Comments: Exposure during focus sweep									
11	Move Focus To -50 (0)	NONE	COS, ALIGN/OSM		FOCUS=-50			0 Secs (0 Secs) *[==>]*	*[1]*
Comments: Offset to focus position									

12	NUV Exposure (COS.im.13 18716)	(2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1700; FLASH=YES	255 Secs (255 Secs)	[==>]	[1]
Comments: Exposure during focus sweep								
13	Move Focus To -25 (0)	NONE	COS, ALIGN/OSM		FOCUS=-25	0 Secs (0 Secs)	[==>]	[1]
Comments: Offset to focus position								
14	NUV Exposure (COS.im.13 18716)	(2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1700; FLASH=YES	255 Secs (255 Secs)	[==>]	[1]
Comments: Exposure during focus sweep								
15	Move to Nominal Focus (0)	NONE	COS, ALIGN/OSM		FOCUS=0	0 Secs (0 Secs)	[==>]	[1]
Comments: Nominal Focus Location								
16	NUV Exposure (COS.im.13 18716)	(2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1700; FLASH=YES	265 Secs (265 Secs)	[==>]	[2]
Comments: Exposure during focus sweep								
17	Move Focus To +25 (0)	NONE	COS, ALIGN/OSM		FOCUS=25	0 Secs (0 Secs)	[==>]	[2]
Comments: Offset to focus position								
18	NUV Exposure (COS.im.13 18716)	(2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1700; FLASH=YES	265 Secs (265 Secs)	[==>]	[2]
Comments: Exposure during focus sweep								
19	Move Focus To +50 (0)	NONE	COS, ALIGN/OSM		FOCUS=50	0 Secs (0 Secs)	[==>]	[2]
Comments: Offset to focus position								
20	NUV Exposure (COS.im.13 18716)	(2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1700; FLASH=YES	265 Secs (265 Secs)	[==>]	[2]
Comments: Exposure during focus sweep								
21	Move Focus To +75 (0)	NONE	COS, ALIGN/OSM		FOCUS=75	0 Secs (0 Secs)	[==>]	[2]
Comments: Offset to focus position								
22	NUV Exposure (COS.im.13 18716)	(2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1700; FLASH=YES	265 Secs (265 Secs)	[==>]	[2]
Comments: Exposure during focus sweep								
23	Move Focus To +100 (0)	NONE	COS, ALIGN/OSM		FOCUS=100	0 Secs (0 Secs)	[==>]	[2]
Comments: Offset to focus position								

24	NUV Exposure (COS.im.13 18716)	(2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1700; FLASH=YES	265 Secs (265 Secs) *[==>]*		***[2]***
Comments: Exposure during focus sweep								
25	Move Focus To +125 (0)	NONE	COS, ALIGN/OSM		FOCUS=125	0 Secs (0 Secs) *[==>]*		***[2]***
Comments: Offset to focus position								
26	NUV Exposure (COS.im.13 18716)	(2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1700; FLASH=YES	265 Secs (265 Secs) *[==>]*		***[2]***
Comments: Exposure during focus sweep								
27	Move Focus To +150 (0)	NONE	COS, ALIGN/OSM		FOCUS=150	0 Secs (0 Secs) *[==>]*		***[2]***
Comments: Offset to focus position								
28	NUV Exposure (COS.im.13 18716)	(2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1700; FLASH=YES	265 Secs (265 Secs) *[==>]*		***[2]***
Comments: Exposure during focus sweep								
29	Move Focus To +175 (0)	NONE	COS, ALIGN/OSM		FOCUS=175	0 Secs (0 Secs) *[==>]*		***[2]***
Comments: Offset to focus position								
30	NUV Exposure (COS.im.13 18716)	(2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1700; FLASH=YES	265 Secs (265 Secs) *[==>]*		***[3]***
Comments: Exposure during focus sweep								
31	Move Focus To +200 (0)	NONE	COS, ALIGN/OSM		FOCUS=200	0 Secs (0 Secs) *[==>]*		***[3]***
Comments: Offset to focus position								
32	NUV Exposure (COS.im.13 18716)	(2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1700; FLASH=YES	265 Secs (265 Secs) *[==>]*		***[3]***
Comments: Exposure during focus sweep								
33	Move Focus To +250 (0)	NONE	COS, ALIGN/OSM		FOCUS=250	0 Secs (0 Secs) *[==>]*		***[3]***
Comments: Offset to focus position								
34	NUV Exposure (COS.im.13 18716)	(2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1700; FLASH=YES	265 Secs (265 Secs) *[==>]*		***[3]***
Comments: Exposure during focus sweep								
35	Move Focus To +300 (0)	NONE	COS, ALIGN/OSM		FOCUS=300	0 Secs (0 Secs) *[==>]*		***[3]***
Comments: Offset to focus position								

	36	NUV Exposure (COS.im.13 18716)	(2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1700; FLASH=YES	265 Secs (265 Secs) *[==>]*	***[3]***
	Comments: Exposure during focus sweep							
	37	Move Focus To +350 (0)	NONE	COS, ALIGN/OSM		FOCUS=350	0 Secs (0 Secs) *[==>]*	***[3]***
	Comments: Offset to focus position							
	38	NUV Exposure (COS.im.13 18716)	(2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1700; FLASH=YES	265 Secs (265 Secs) *[==>]*	***[3]***
	Comments: Exposure during focus sweep							
	39	Move Focus To +400 (0)	NONE	COS, ALIGN/OSM		FOCUS=400	0 Secs (0 Secs) *[==>]*	***[3]***
	Comments: Offset to focus position							
	40	NUV Exposure (COS.im.13 18716)	(2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1700; FLASH=YES	265 Secs (265 Secs) *[==>]*	***[3]***
	Comments: Exposure during focus sweep							
	41	Move to Nominal Focus (0)	NONE	COS, ALIGN/OSM		FOCUS=0	0 Secs (0 Secs) *[==>]*	***[3]***
	Comments: Back to Nominal Focus Location							
	42	Nominal Focus Exposure (COS.im.13 18716)	(2) IDK-M002	COS/NUV, TIME-TAG, PSA	MIRRORA	BUFFER-TIME=1700; FLASH=YES	265 Secs (265 Secs) *[==>]*	***[3]***
	Comments: Exposure at nominal focus position							

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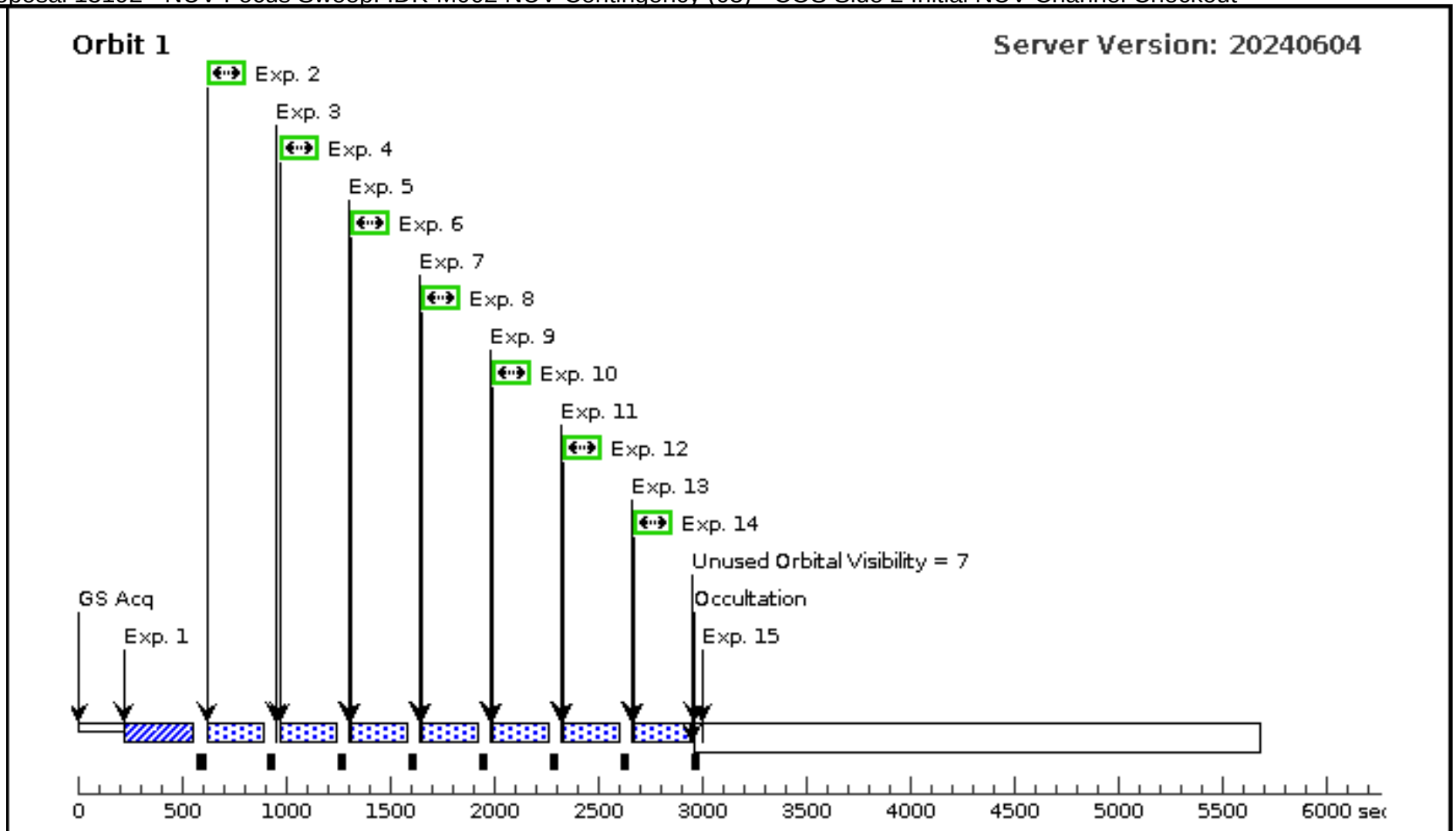

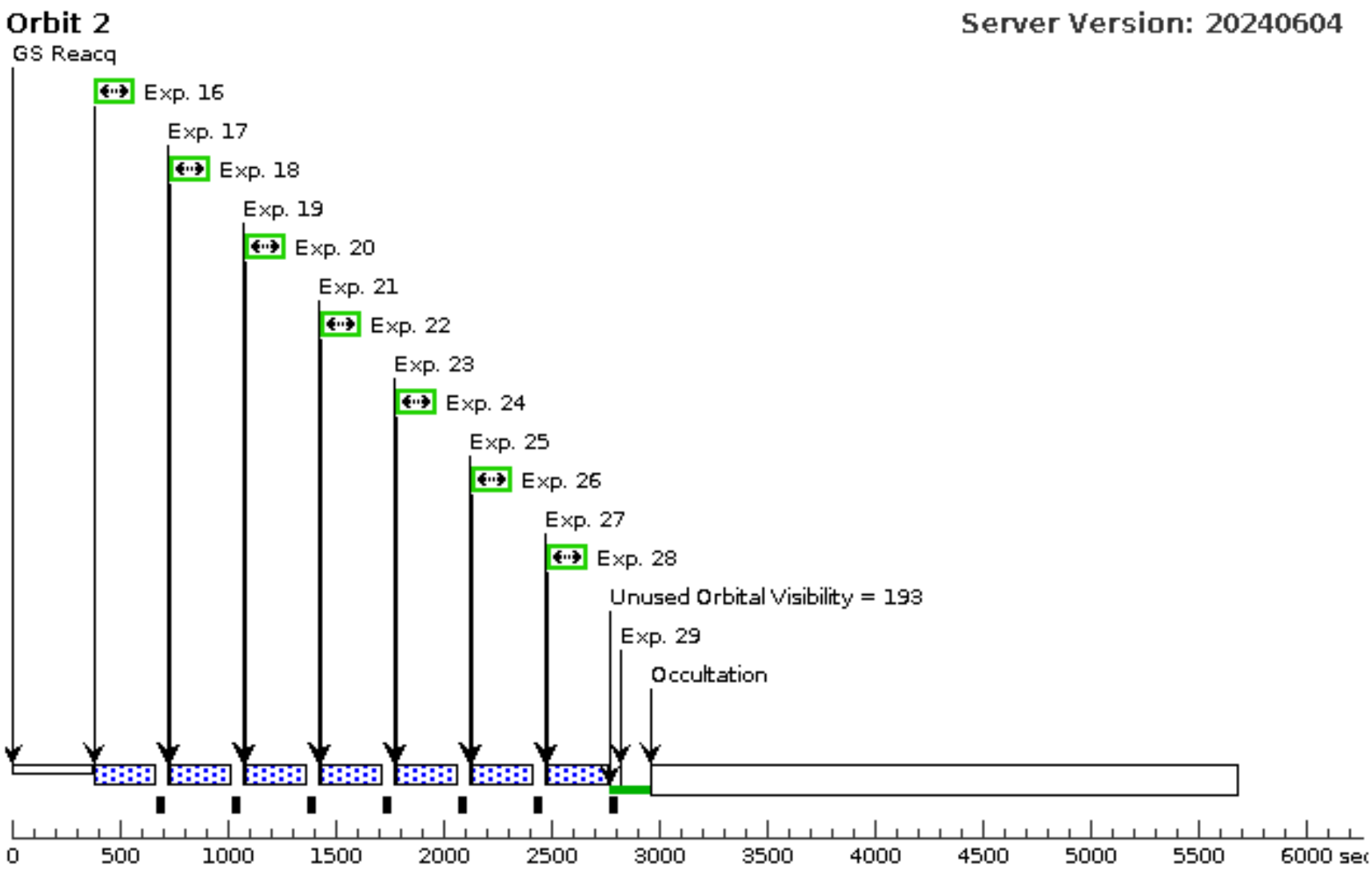
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Exp. 22
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Exp. 24
Exp. 25
Exp. 26
Exp. 27
Exp. 28
Unused Orbital Visibility = 193
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Occultation
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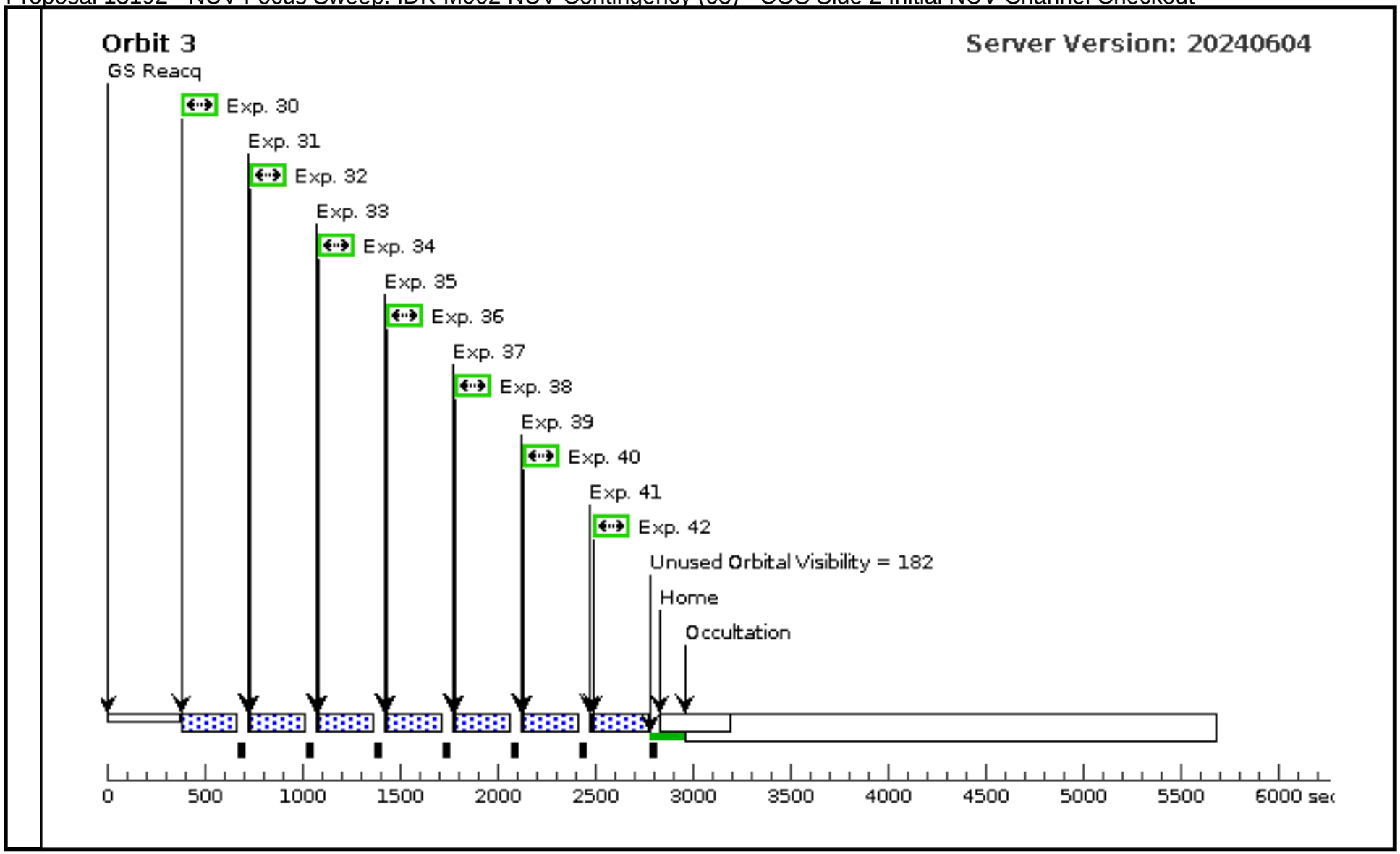
6000 sec


Orbit 3
Server Version: 20240604
GS Reacq
Exp. 30
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Exp. 39
Exp. 40
Exp. 41
Exp. 42
Unused Orbital Visibility = 182
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Occultation
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