17327 - Cycle 31 COS FUV Wavelength Scale Monitor

Cycle: 31, 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	(1) AV75	COS/FUV COS/NUV	4	17-Jul-2023 15:00:18.0	yes

4 Total Orbits Used

ABSTRACT

This program monitors the stability of the constant terms in the FUV dispersion solutions. To monitor for any changes, the program observes AV 75 at selected cenwaves at multiple FP-POS positions for all FUV gratings. Via cross-correlation, spectra are compared to those obtained in previous iterations of the program, to STIS spectra obtained in-orbit, and to a model.

OBSERVING DESCRIPTION

To monitor the constant terms in the COS/FUV dispersion solutions in Cycle 31, we take spectra with the cenwaves 1096, 1222, 1291, and 1327 in G130M, cenwaves 1577 and 1623 in G160M, and cenwaves 1105 and 1280 in G140L. In accordance with the COS 2025 rules, changes were made for Cycle 25 and going forward: FP-POS 2 of cenwave 1291 was changed to 3, segment B of cenwave 1327 is not observed, and exposures were

rearranged due to the overhead associated with turning a segment off. With the M gratings, FP-POS are alternated between exposures to fulfill our S/N requirements and mitigate the effects of gain sag. The enabling of LP6 for Cycle 30 requires G160M spectra at both LP4 and LP6. Orients have been put in place to avoid field objects that are too bright for the PSA/MIRRORA when performing the TA with the BOA. The detailed clearance of the target and crowded field was done in the CS review of calibration program 13070. Due to past GS acquisition issues (e.g., Visit 01 of Cycle 23 program 14437; see HOPR 83980), there is an ACQ/SEARCH in the TA sequence. Data from previous iterations of this program were used to update the ETC calculations for Cycle 25; mild adjustments were made to the exposure times in Cycle 29 to allow for increased overheads due to LP changes. Cycle 31 retains these exposure times. To maintain a regular interval of about 12 months since the last visit, the program will ideally be carried out in June-July 2024. The schedulability is set to 80% to fit all the observations in four orbits. The PC and schedulers approved keeping this program as a single visit with 4 orbits.

Visit

Proposal 17327, G160M at LP4 and LP6 (01), implementation Mon Jul 17 19:00:19 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 80%; ORIENT 275D TO 60 D; ORIENT 160D TO 165 D; BETWEEN 26-JUN-2024:00:00:00 AND 31-JUL-2024:00:00:00

Comments: An ACQ/SEARCH was added to the TA sequence in Cycle 23 and should be carried over each cycle to avoid GS issues. This is a crowded field. The window in June-July 2023 is preferred to maintain a pattern of about 12 months between visits. The schedulability is set to 80% to fit all the observations in four orbits.

Diagnostics

(G160M at LP4 and LP6 (01)) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions when observing at a given COS cenwave. See the COS Instrument Handbook for exceptions that may apply to observations with G130M/1291 or G160M.

(G160M at LP4 and LP6 (01)) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS

(G160M at LP4 and LP6 (01)) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	AV75	RA: 00 50 32.3900 (12.6349583d) Dec: -72 52 36.48 (-72.87680d) Equinox: J2000		V=12.79	Reference Frame: ICRS

Comments: This object was generated by the target selector and retrieved from the SIMBAD database.
Category=STAR
Description=[SUPERGIANT O]
Extended=NO

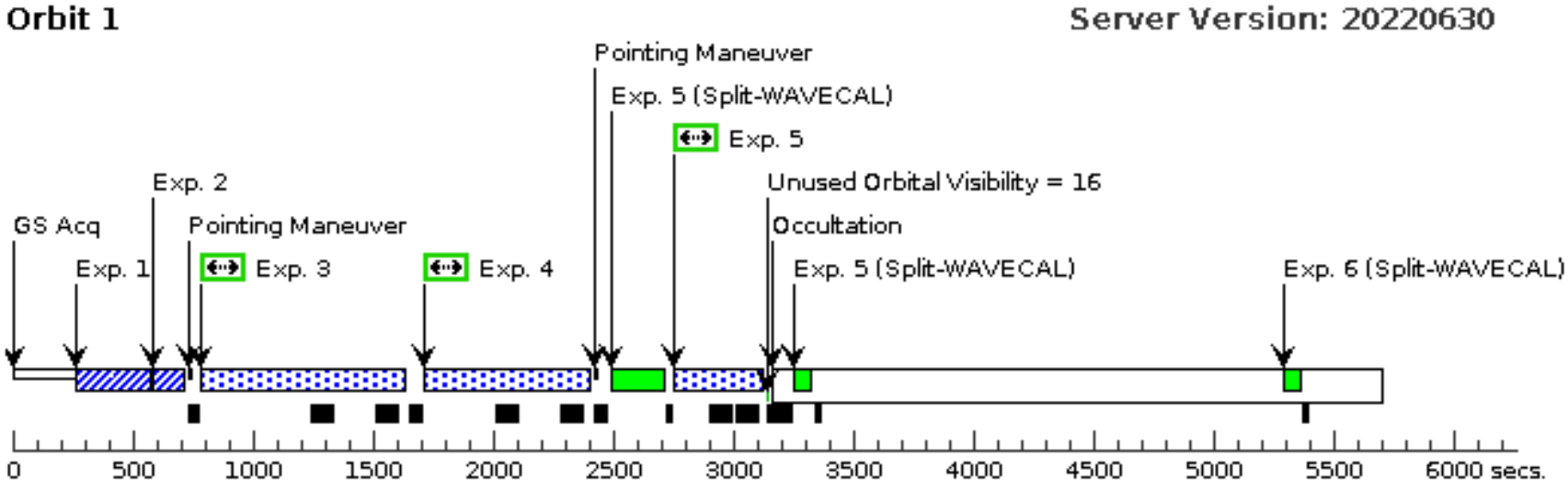
Exposures

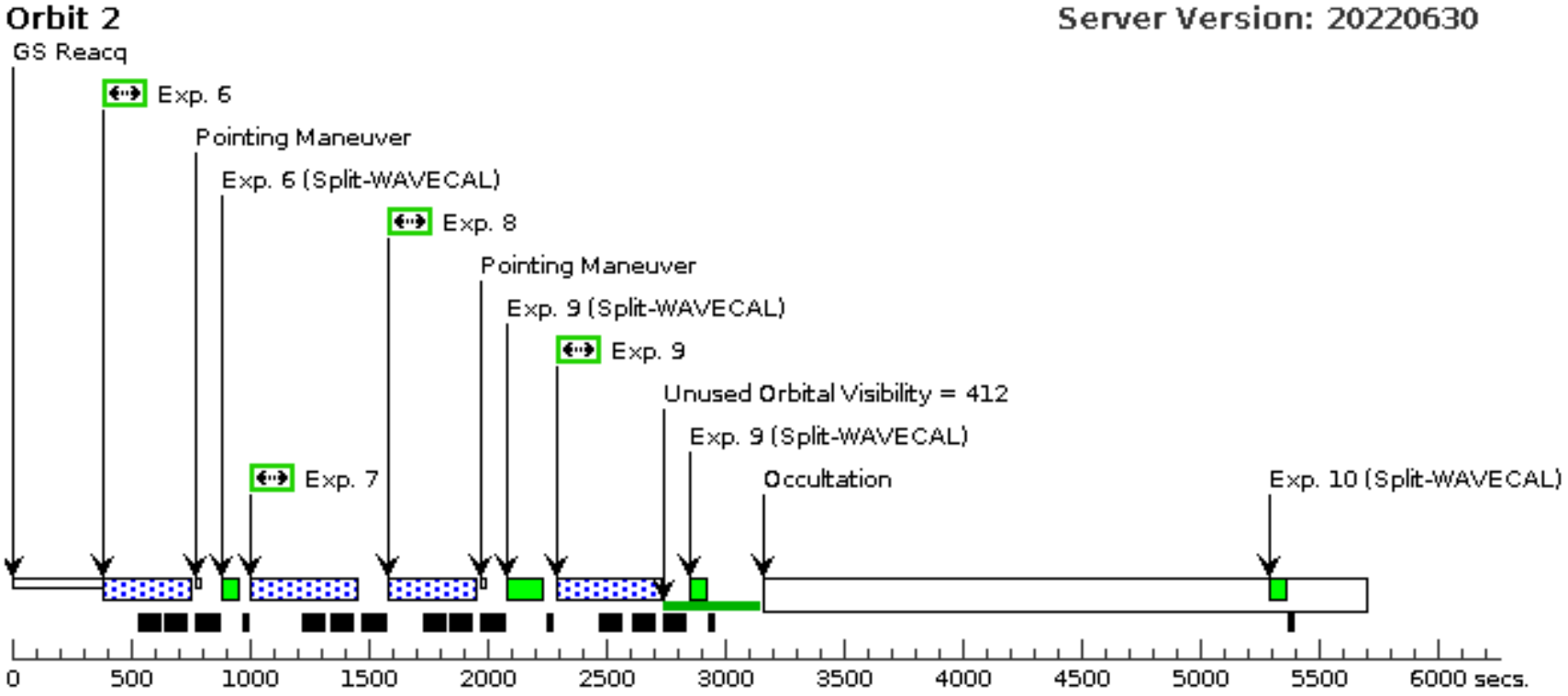
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ/SEARCH (COS.ta.1025824)	(1) AV75	COS/NUV, ACQ/SEARCH, BOA	MIRRORA	STEP-SIZE=1.767; SCAN-SIZE=2; CENTER=FLUX-WT			8.3 Secs (8.3 Secs) *[==>]*	***[1]***
	Comments: Increased exposure time by 1s based on updated ETC: COS.ta.1823225								
2	ACQ/IMAGE (COS.ta.1025825)	(1) AV75	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				13.0 Secs (13 Secs) *[==>]*	***[1]***
3	G130M/1096/FP2 (COS.sp.1025732)	(1) AV75	COS/FUV, TIME-TAG, PSA	G130M 1096 A	BUFFER-TIME=264; FP-POS=2; LIFETIME-POS=LP2			638 Secs (638 Secs) *[==>]*	***[1]***
	Comments: Buffer-time has been reduced based on updated ETC run: COS.sp.1823228. New time is calculated via (EXP - 110)/N to minimize overheads. Exposure time remains unchanged from cycle 29. Buffer time remains unchanged from cycle 30.								
4	G130M/1096/FP4 (COS.sp.1025732)	(1) AV75	COS/FUV, TIME-TAG, PSA	G130M 1096 A	BUFFER-TIME=264; FP-POS=4; LIFETIME-POS=LP2			638 Secs (638 Secs) *[==>]*	***[1]***
	Comments: Buffer-time has been reduced based on updated ETC run: COS.sp.1823228. New time is calculated via (EXP - 110)/N to minimize overheads. Exposure time remains unchanged from cycle 29. Buffer time remains unchanged from cycle 30.								
5	G160M/1577/FP2/LP6 (COS.sp.1025737)	(1) AV75	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=111; FP-POS=2; LIFETIME-POS=LP6			322 Secs (322 Secs) *[==>]*	***[1]***
	Comments: Buffer-time has been reduced based on updated ETC run: COS.sp.1824304. New time is calculated via (EXP - 110)/N, set to the minimum of 111s to minimize overheads. Exposure time remains unchanged from cycle 29. Buffer time remains unchanged from cycle 30.								
6	G160M/1577/FP4/LP6 (COS.sp.1025737)	(1) AV75	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=111; FP-POS=4; LIFETIME-POS=LP6			322 Secs (322 Secs) *[==>]*	***[2]***
	Comments: Buffer-time has been reduced based on updated ETC run: COS.sp.1824304. New time is calculated via (EXP - 110)/N, set to the minimum of 111s to minimize overheads. Exposure time remains unchanged from cycle 29. Buffer time remains unchanged from cycle 30.								
7	G160M/1577/FP2/LP4 (COS.sp.1025737)	(1) AV75	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=111; FP-POS=2; LIFETIME-POS=LP4			322 Secs (322 Secs) *[==>]*	***[2]***
	Comments: Buffer-time has been reduced based on updated ETC run: COS.sp.1824304. New time is calculated via (EXP - 110)/N, set to the minimum of 111s to minimize overheads. Exposure time remains unchanged from cycle 29. Buffer time remains unchanged from cycle 30.								

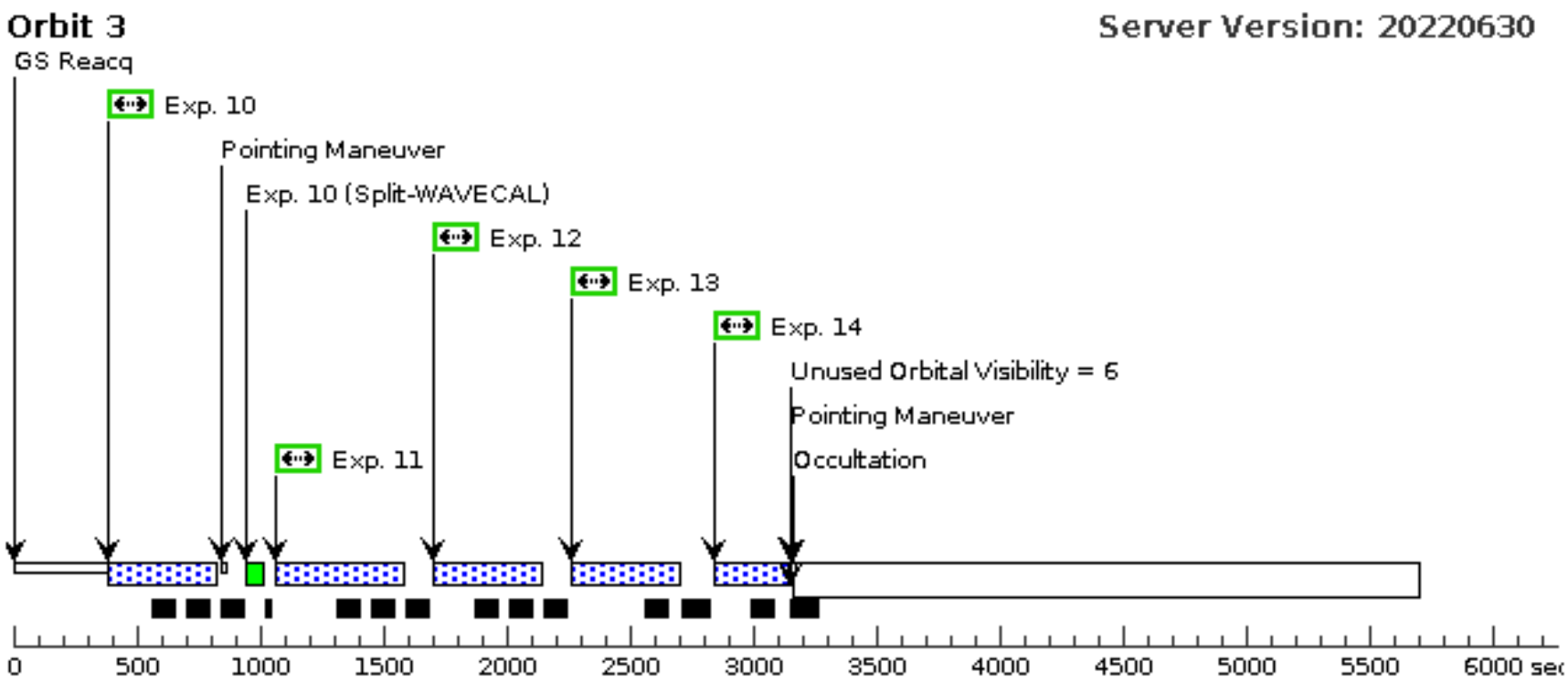
8	G160M/1577/FP4/LP4 (COS.sp.1025737)	(1) AV75	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=111; FP-POS=4; LIFETIME-POS=LP4	322 Secs (322 Secs) *[==>]*	***[2]***
Comments: Buffer-time has been reduced based on updated ETC run: COS.sp.1824304. New time is calculated via (EXP - 110)/N, set to the minimum of 111s to minimize overheads. Exposure time remains unchanged from cycle 29. Buffer time remains unchanged from cycle 30.							
9	G160M/1623/FP1/LP6 (COS.sp.1025738)	(1) AV75	COS/FUV, TIME-TAG, PSA	G160M 1623 A	BUFFER-TIME=139; FP-POS=1; LIFETIME-POS=LP6	389 Secs (389 Secs) *[==>]*	***[2]***
Comments: Buffer-time has been reduced based on updated ETC run: COS.sp.1824318. New time is calculated via (EXP - 110)/N to minimize overheads. Exposure time remains unchanged from cycle 29. Buffer time r emains unchanged from cycle 30.							
10	G160M/1623/FP3/LP6 (COS.sp.1025738)	(1) AV75	COS/FUV, TIME-TAG, PSA	G160M 1623 A	BUFFER-TIME=139; FP-POS=3; LIFETIME-POS=LP6	389 Secs (389 Secs) *[==>]*	***[3]***
Comments: Buffer-time has been reduced based on updated ETC run: COS.sp.1824318. New time is calculated via (EXP - 110)/N to minimize overheads. Exposure time remains unchanged from cycle 29. Buffer time r emains unchanged from cycle 30.							
11	G160M/1623/FP1/LP4 (COS.sp.1025738)	(1) AV75	COS/FUV, TIME-TAG, PSA	G160M 1623 A	BUFFER-TIME=139; FP-POS=1; LIFETIME-POS=LP4	389 Secs (389 Secs) *[==>]*	***[3]***
Comments: Buffer-time has been reduced based on updated ETC run: COS.sp.1824318. New time is calculated via (EXP - 110)/N to minimize overheads. Exposure time remains unchanged from cycle 29. Buffer time r emains unchanged from cycle 30.							
12	G160M/1623/FP3/LP4 (COS.sp.1025738)	(1) AV75	COS/FUV, TIME-TAG, PSA	G160M 1623 A	BUFFER-TIME=139; FP-POS=3; LIFETIME-POS=LP4	389 Secs (389 Secs) *[==>]*	***[3]***
Comments: Buffer-time has been reduced based on updated ETC run: COS.sp.1824318. New time is calculated via (EXP - 110)/N to minimize overheads. Exposure time remains unchanged from cycle 29. Buffer time r emains unchanged from cycle 30.							
13	G130M/1222/FP1 (COS.sp.1025734)	(1) AV75	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=120; FP-POS=1; LIFETIME-POS=LP4	246 Secs (246 Secs) *[==>]*	***[3]***
14	G130M/1222/FP3 (COS.sp.1025734)	(1) AV75	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=120; FP-POS=3; LIFETIME-POS=LP4	246 Secs (246 Secs) *[==>]*	***[3]***
15	G130M/1291/FP3 (COS.sp.1025735)	(1) AV75	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=120; FP-POS=3; LIFETIME-POS=LP5	186 Secs (186 Secs) *[==>]*	***[4]***

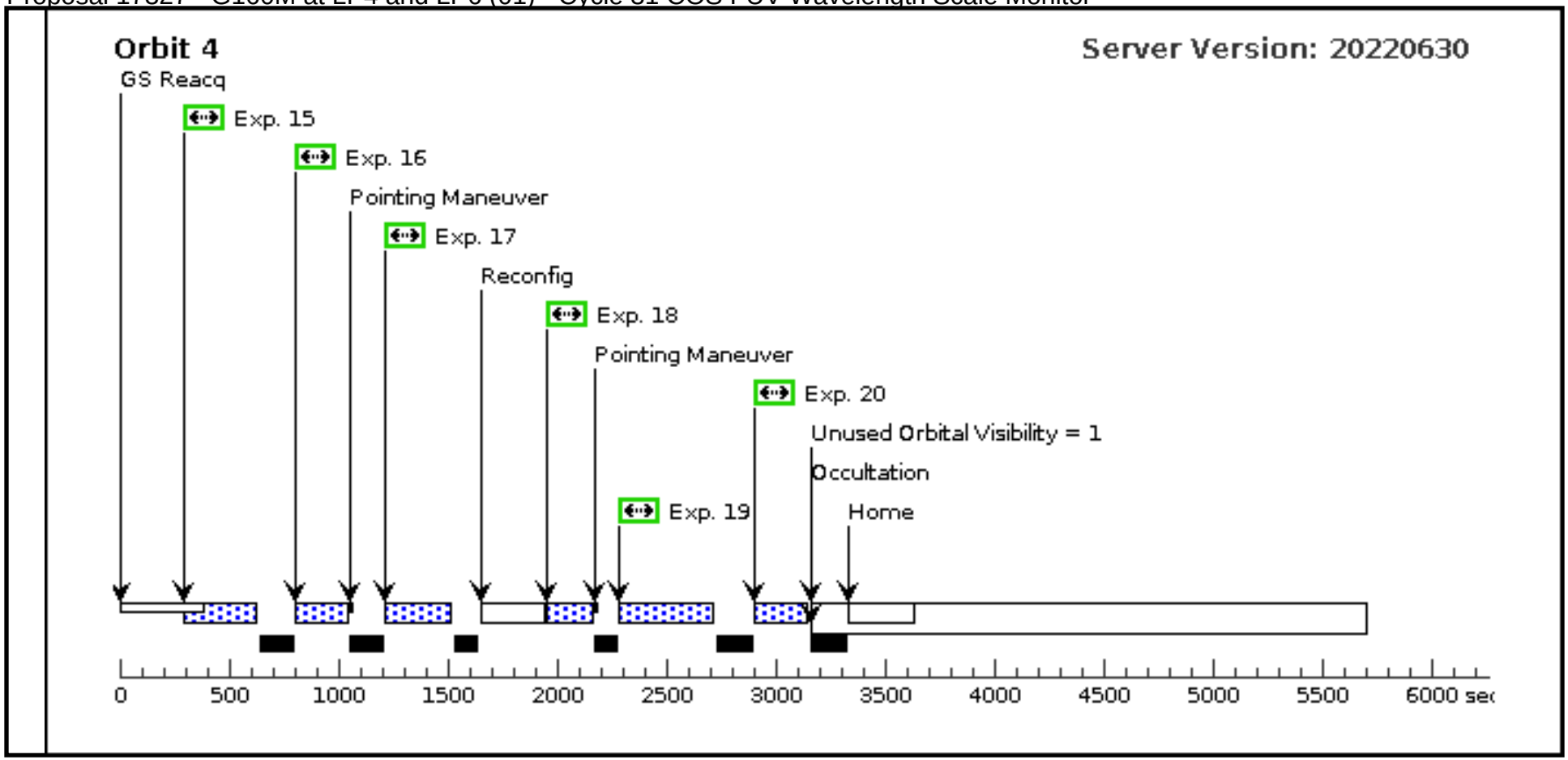
	16	G130M/1291/FP4 (COS.sp.1025735)	(1) AV75	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=120; FP-POS=4; LIFETIME-POS=LP5	186 Secs (186 Secs) *[==>]*	***[4]***
	17	G140L/1280/FP3 (COS.sp.1025740)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 1280 A	BUFFER-TIME=80; FP-POS=3; LIFETIME-POS=LP3	80 Secs (80 Secs) *[==>]*	***[4]***
	18	G140L/1105/FP3 (COS.sp.1025741)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=80; FP-POS=3; LIFETIME-POS=LP3	80 Secs (80 Secs) *[==>]*	***[4]***
	19	G130M/1327/FP1 (COS.sp.1025736)	(1) AV75	COS/FUV, TIME-TAG, PSA	G130M 1327 A	BUFFER-TIME=120; FP-POS=1; SEGMENT=A; LIFETIME-POS=LP5	190 Secs (190 Secs) *[==>]*	***[4]***
	20	G130M/1327/FP3 (COS.sp.1025736)	(1) AV75	COS/FUV, TIME-TAG, PSA	G130M 1327 A	BUFFER-TIME=120; FP-POS=3; SEGMENT=A; LIFETIME-POS=LP5	190 Secs (190 Secs) *[==>]*	***[4]***

Orbit Structure




Orbit 2
Server Version: 20220630
GS Reacq
Exp. 6
Pointing Maneuver
Exp. 6 (Split-WAVECAL)
Exp. 8
Pointing Maneuver
Exp. 9 (Split-WAVECAL)
Exp. 9
Unused Orbital Visibility = 412
Exp. 9 (Split-WAVECAL)
Occultation
Exp. 10 (Split-WAVECAL)
Exp. 7
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000 secs.


Orbit 3
Server Version: 20220630
GS Reacq
Exp. 10
Pointing Maneuver
Exp. 10 (Split-WAVECAL)
Exp. 12
Exp. 13
Exp. 14
Unused Orbital Visibility = 6
Pointing Maneuver
Occultation
Exp. 11
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000 sec


Orbit 4
Server Version: 20220630
GS Reacq
Exp. 15
Exp. 16
Pointing Maneuver
Exp. 17
Reconfig
Exp. 18
Pointing Maneuver
Exp. 20
Unused Orbital Visibility = 1
Occultation
Exp. 19
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000 sec