18212 - LP11 Coarse Focus Run

Cycle: 33, 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 NONE	COS COS/FUV COS/NUV	1	24-Nov-2025 07:00:17.0	yes
02	(1) AV75 NONE	COS COS/FUV COS/NUV	1	24-Nov-2025 07:00:19.0	yes
04	(1) AV75 NONE	COS COS/FUV COS/NUV	1	24-Nov-2025 07:00:20.0	yes
03	(1) AV75 NONE	COS COS/FUV COS/NUV	1	24-Nov-2025 07:00:22.0	yes

4 Total Orbits Used

ABSTRACT

This program will observe a target with sharp absorption line features (AvZ 75) using each standard cenwave of G140L. The existing CODE V models will be used to determine a rough zero point, and then the focus mechanism will be moved in +/- 250 step increments for each cenwave to obtain an approximate best focus. This information will inform the COS team regarding CODE V model performance for G140L in the off-axis LP11 position. Unlike the medium resolution gratings, the G140L cenwaves are many steps apart so we must determine the focus for each one, rather than measuring one cenwave and assuming a constant offset for the others. Additionally, the information from this program will inform the COS team regarding the accuracy of the CODE V models both far off-axis and at the extreme wavelength ends of G140L.

OBSERVING DESCRIPTION

--SPECIAL NOTES--

-Image calibration:

(1) Please turn off calibration for all the COS/FUV exposures. These data should not be used for scientific purposes.

(2) Please disassociate all exposures. All data that is not calibrated must be disassociated to make it into the archive.

SQL is used to meet the above requests. For request (1) qexposure.control_id is modified. For request (2) qeassociation records are deleted. Contact the HST SOC SE team for further information about this process.

Determine rough focus values for G140L/800, 1105, and 1280 at the LP11 location below LP4, and compare these values against existing CODE V models.

NOTE: There are two G140L/800 visits and one of them is on hold. This is because we are in the process of assessing whether a FSW patch moving the LP1 G140L/800 focus from -999 to -400 will be allowed. If it is, the "scenario 2" visit will run, and if not the "scenario 1" visit will run.

Order of focus values per cenwave:

G140L/1280 (CODE V model suggests -100 is the best focus)

Exposure	Relative_focus	Absolute_focus
01.005	0	-284 (LP3 absolute value)
01.007	-1000	-1284
01.009	-400	-684
01.011	+400	+116
01.013	+1000	+716
01.015	+1500	+1216

G140L/800 (CODE V model suggests +937 is the best focus; but it is intentionally defocused to reduce cross-dispersion height). NOTE: Unlike the G140L/1280 and 1105 visits, the G140L/800 visit is set relative to LP1. This is because the FSW focus values for LP3 and LP4 are too far negative to sweep the full focus range we are intending (-2300 to +1500), which is supposed to span the LP3/LP4 best-focus plus the CODE V model best focus. This is because APT currently (Version 2025.5.3) limits FOCUS values to +/- 2000 steps from the starting point. We have two plans to mitigate this process. The first will use LP1, which has a FSW value of -999 for the G140L/800 focus, and allows us to sweep most of the intended range. The second involves Alan Welty patching the LP1 FSW focus value for G140L/800 before this program runs to a value more in the middle (-400 steps), and then patching back to the original -999 afterward. Below I provide the relative and absolute focus values for both scenarios, though both rely on starting at LP1.

Scenario #1: no patching and using default LP1 = -999

Exposure	Relative_focus	Absolute_focus
02.005	+0	-999 (LP1 absolute value)
02.007	-1300	-2299
02.009	-500	-1499
02.011	+700	-299
02.013	+1300	+301

02.015	+2000	+1001

Scenario #2: patching and using default LP1 = -400

Exposure	Relative_focus	Absolute_focus
04.005	+0	-400 (LP1 absolute value after patch)
04.007	-1300	-1700
04.009	-500	-900
04.011	+700	+300
04.013	+1300	+900
04.015	+2000	+1600

G140L/1105 (CODE V model suggests +300 is the best focus)

Exposure	Relative_focus	Absolute_focus
03.005	+0	-673 (LP3 absolute focus)
03.007	-1000	-1673
03.009	-400	-1073
03.011	+400	-273
03.013	+1000	+327
03.015	+1500	+827

UPDATE: As of November 13, 2025, the COS team received permission from Goddard to temporarily patch the G140L/800 LP1 focus from -999 to -400. Therefore, the program will execute with Visit 04 instead of Visit 02.

Visit

Proposal 18212, G140L/1280 (01), implementation Mon Nov 24 12:00:22 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: COS, COS/FUV, COS/NUV

Special Requirements: (none)

Diagnostics

(G140L/1280 (01)) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions at a given COS cenwave (or 2 positions for certain exception cases). See extended explanation in the diagnostic browser.

(G140L/1280 (01)) Warning (Orbit Planner): COS EXPOSURE TIME ROUNDED DOWN TO NEAREST 0.1 SECONDS

(G140L/1280 (01)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

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Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	AV75	RA: 00 50 32.4051 (12.6350213d)	Proper Motion RA: 0.746 mas/yr	V=12.756	Reference Frame: ICRS
	Alt Name1: LIN-156	Dec: -72 52 36.44 (-72.87679d)	Proper Motion Dec: -1.255999950444675 mas/yr		
		Equinox: J2000	Parallax: 2.04E-5"		
			Epoch of Position: 2000		

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

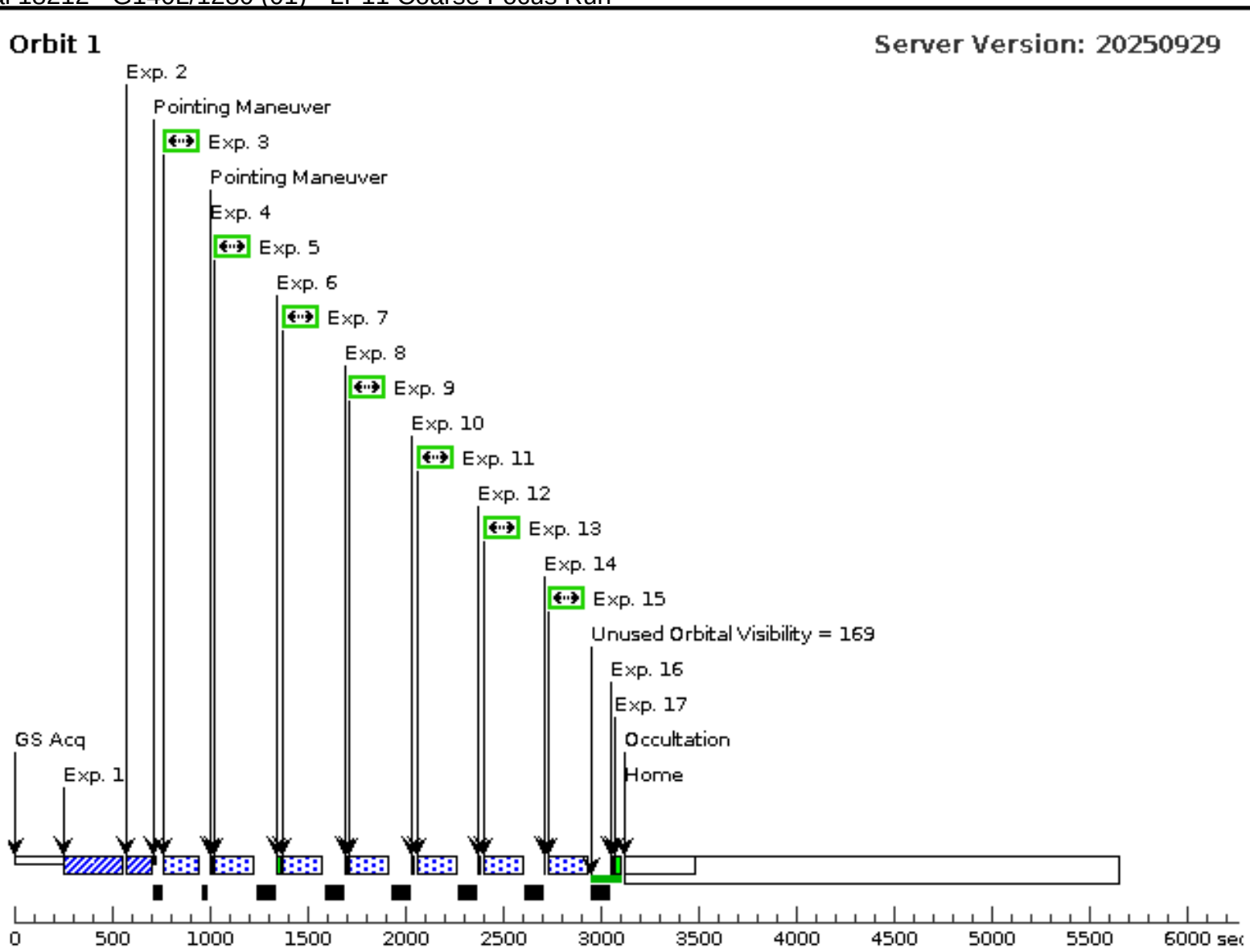
SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=STAR
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 BOA (COS.ta.2225283)	(1) AV75	COS/NUV, ACQ/SEARCH, BOA	MIRRORA	STEP-SIZE=1.767; SCAN-SIZE=2; CENTER=FLUX-WT	GS ACQ SCENARIO BASE1OR	Sequence 1-17 Non-Int in G140L/1280 (01)	7.3 Secs (7.3 Secs) *[==>]*	***[1]***
2	ACQ/IMAGE BOA (COS.ta.2225264)	(1) AV75	COS/NUV, ACQ/IMAGE, BOA	MIRRORA			Sequence 1-17 Non-Int in G140L/1280 (01)	12 Secs (12 Secs) *[==>]*	***[1]***
	Comments: TA information taken from PID 16467. The ACQ/SEARCH step is skipped since the Gaia coordinates should be accurate.								
3	Initialization Exposure at LP3 (COS.sp.2225282)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 1280 A	LIFETIME-POS=LP3; SEGMENT=BOTH; FP-POS=3; BUFFER-TIME=80; FLASH=NO; WAVECAL=NO		Sequence 1-17 Non-Int in G140L/1280 (01)	0.1 Secs (0.1 Secs) *[==>]*	***[1]***
4	Move aperture from LP3 to LP11 position	NONE	COS, ALIGN/APER		XAPER=89		Sequence 1-17 Non-Int in G140L/1280 (01)	0.0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: LAPXSTP for PSA at LP3 is +181 *LAPXSTP for PSA at LP11 was determined to be +270 steps (closest safe approach to the soft stop)* *XAPER = desired position - current position* *XAPER = +270 - +181 = +89*								
5	Exposure at nominal focus value of -284 (COS.sp.2225282)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 1280 A	LIFETIME-POS=LP3; FP-POS=3; BUFFER-TIME=190; SEGMENT=BOTH	POS TARG null,-4.238	Sequence 1-17 Non-Int in G140L/1280 (01)	150 Secs (150 Secs) *[==>]*	***[1]***
	Comments: Nominal focus value for LP3 for G140L/1280 is -284 (source: Dave Sahnow focus value table). This is close to the -100 value found by the CODE V models. *Since the aperture block was moved +89 steps, a POS TARG Y offset of -(89)/21 = -4.238" is included.*								
6	Adjust Focus by -1000	NONE	COS, ALIGN/OSM		FOCUS=-1000		Sequence 1-17 Non-Int in G140L/1280 (01)	0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: FOCUS is the value is relative to the starting point; value entered as FOCUS in APT is the difference added to the original focus to get to the absolute focus value you want. *Since the starting focus is -284, the absolute focus value here is -1284.*								
7	Exposure at FOCUS = -1284 (COS.sp.2225282)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 1280 A	LIFETIME-POS=LP3; FP-POS=3; BUFFER-TIME=190; SEGMENT=BOTH	POS TARG null,-4.238	Sequence 1-17 Non-Int in G140L/1280 (01)	150 Secs (150 Secs) *[==>]*	***[1]***
8	Adjust Focus by -400	NONE	COS, ALIGN/OSM		FOCUS=-400		Sequence 1-17 Non-Int in G140L/1280 (01)	0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: Original focus = -284; new focus = -684								

9	Exposure at -684 (COS.sp.2225282)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 1280 A	LIFETIME-POS=LP3; FP-POS=3; BUFFER-TIME=190; SEGMENT=BOTH	POS TARG null,-4.238	Sequence 1-17 Non-Int in G140L/1280 (01)	150 Secs (150 Secs) *[==>]*	***[1]***
10	Adjust Focus by +400	NONE	COS, ALIGN/OSM		FOCUS=400		Sequence 1-17 Non-Int in G140L/1280 (01)	0 Secs (0 Secs) *[==>]*	***[1]***
Comments: original focus = -284; new focus = +116									
11	Exposure at +116 (COS.sp.2225282)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 1280 A	LIFETIME-POS=LP3; FP-POS=3; BUFFER-TIME=190; SEGMENT=BOTH	POS TARG null,-4.238	Sequence 1-17 Non-Int in G140L/1280 (01)	150 Secs (150 Secs) *[==>]*	***[1]***
12	Adjust Focus by +1000	NONE	COS, ALIGN/OSM		FOCUS=1000		Sequence 1-17 Non-Int in G140L/1280 (01)	0 Secs (0 Secs) *[==>]*	***[1]***
Comments: original focus = -284; new focus = +716									
13	Exposure at +716 (COS.sp.2225282)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 1280 A	LIFETIME-POS=LP3; FP-POS=3; BUFFER-TIME=190; SEGMENT=BOTH	POS TARG null,-4.238	Sequence 1-17 Non-Int in G140L/1280 (01)	150 Secs (150 Secs) *[==>]*	***[1]***
14	Adjust Focus by +1500	NONE	COS, ALIGN/OSM		FOCUS=1500		Sequence 1-17 Non-Int in G140L/1280 (01)	0 Secs (0 Secs) *[==>]*	***[1]***
Comments: original focus = -284; new focus = +1216									
15	Exposure at +1216 (COS.sp.2225282)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 1280 A	LIFETIME-POS=LP3; FP-POS=3; BUFFER-TIME=190; SEGMENT=BOTH	POS TARG null,-4.238	Sequence 1-17 Non-Int in G140L/1280 (01)	150 Secs (150 Secs) *[==>]*	***[1]***
16	Return aperture block	NONE	COS, ALIGN/APER		XAPER=0	QESIPARM XSTEPS -89	Sequence 1-17 Non-Int in G140L/1280 (01)	0.0 Secs (0 Secs) *[==>]*	***[1]***
Comments: Returning aperture block to nominal LP3 position. Original move was +89 steps so XAPER = 0 and XSTEPS = -89.									
17	Return focus to original position	NONE	COS, ALIGN/OSM		FOCUS=0		Sequence 1-17 Non-Int in G140L/1280 (01)	0 Secs (0 Secs) *[==>]*	***[1]***
Comments: Return focus to 0 position.									

Orbit Structure



Visit

Proposal 18212, G140L/800 Scenario 1 (02), implementation Mon Nov 24 12:00:23 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: COS, COS/FUV, COS/NUV

Special Requirements: ON HOLD

On Hold Comments: This is the first scenario for G140L/800 where the COS team has not received permission from GSFC to temporarily patch the LP1 G140L/800 focus value from -999 to -400. However, the COS team received permission from Goddard on November 13, 2025.

Diagnostics

(G140L/800 Scenario 1 (02)) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions at a given COS cenwave (or 2 positions for certain exception cases). See extended explanation in the diagnostic browser.

(G140L/800 Scenario 1 (02)) Warning (Orbit Planner): COS EXPOSURE TIME ROUNDED DOWN TO NEAREST 0.1 SECONDS

(G140L/800 Scenario 1 (02)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

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Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	AV75	RA: 00 50 32.4051 (12.6350213d)	Proper Motion RA: 0.746 mas/yr	V=12.756	Reference Frame: ICRS
	Alt Name1: LIN-156	Dec: -72 52 36.44 (-72.87679d)	Proper Motion Dec: -1.255999950444675 mas/yr		
		Equinox: J2000	Parallax: 2.04E-5"		
			Epoch of Position: 2000		

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

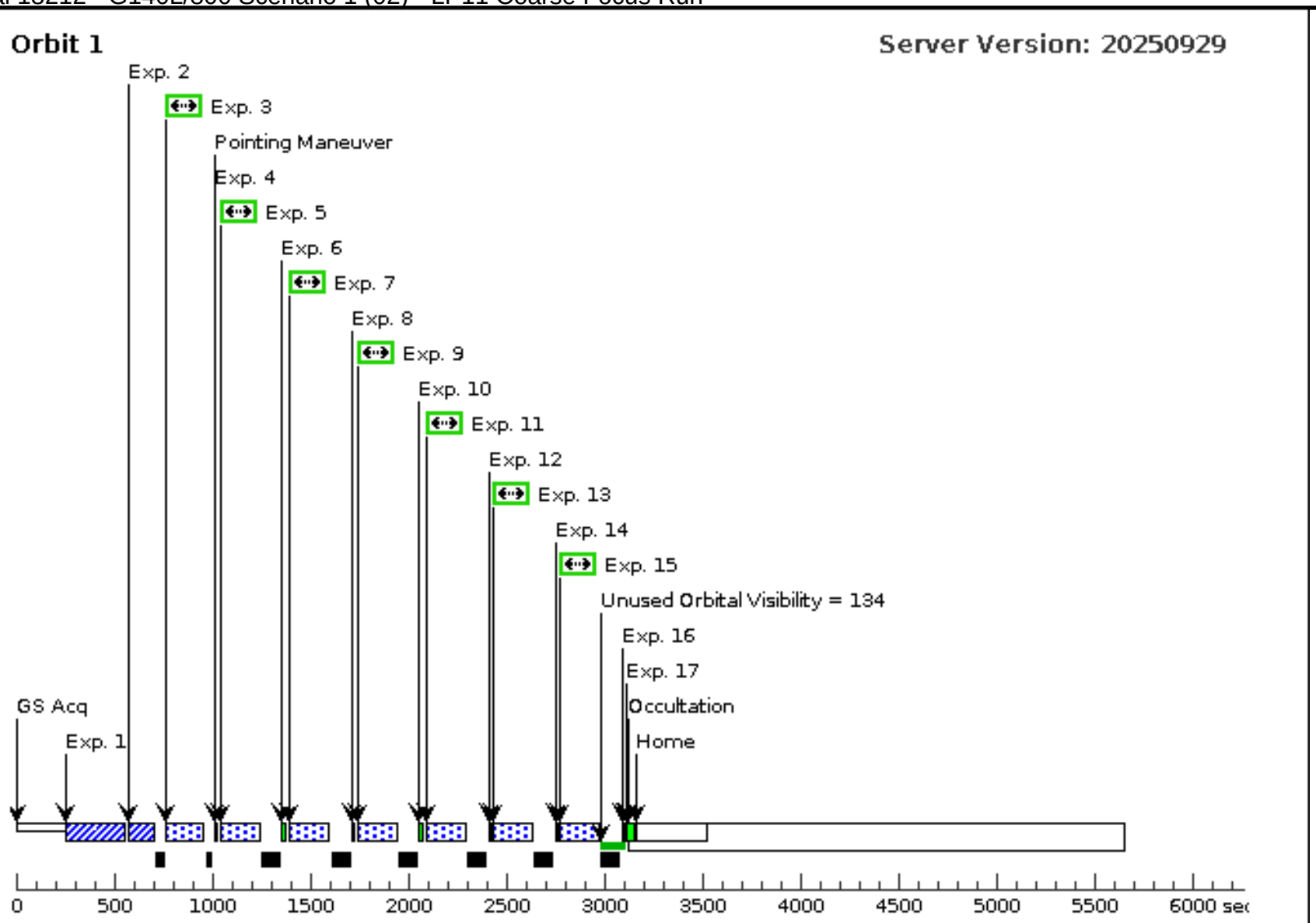
SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=STAR
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 BOA (COS.ta.2225283)	(1) AV75	COS/NUV, ACQ/SEARCH, BOA	MIRRORA	STEP-SIZE=1.767; SCAN-SIZE=2; CENTER=FLUX-WT	GS ACQ SCENARIO BASE1OR	Sequence 1-17 Non-Int in G140L/800 Scenario 1 (02)	7.3 Secs (7.3 Secs) *[==>]*	***[1]***
2	ACQ/IMAGE BOA (COS.ta.2225264)	(1) AV75	COS/NUV, ACQ/IMAGE, BOA	MIRRORA			Sequence 1-17 Non-Int in G140L/800 Scenario 1 (02)	12 Secs (12 Secs) *[==>]*	***[1]***
	Comments: TA information taken from PID 16467. The ACQ/SEARCH step is skipped since the Gaia coordinates should be accurate.								
3	Initialization Exposure at LP1 (COS.sp.2225285)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 800 A	LIFETIME-POS=LP1; SEGMENT=A; FP-POS=3; BUFFER-TIME=80; FLASH=NO; WAVECAL=NO		Sequence 1-17 Non-Int in G140L/800 Scenario 1 (02)	0.1 Secs (0.1 Secs) *[==>]*	***[1]***
4	Move aperture from LP1 to LP11 position	NONE	COS, ALIGN/APER		XAPER=144		Sequence 1-17 Non-Int in G140L/800 Scenario 1 (02)	0.0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: LAPXSTP for PSA at LP1 is +126 *LAPXSTP for PSA at LP11 was determined to be +270 steps (closest safe approach to the soft stop)* *XAPER = desired position - current position* *XAPER = +270 - +126 = +144*								
5	Focus exposure at nomial value of -999 (COS.sp.2225285)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 800 A	LIFETIME-POS=LP1; FP-POS=3; BUFFER-TIME=190; SEGMENT=A	POS TARG null,-6.857	Sequence 1-17 Non-Int in G140L/800 Scenario 1 (02)	150 Secs (150 Secs) *[==>]*	***[1]***
	Comments: Nominal focus value for LP1 for G140L/800 is -999. Note that this is simply the default placeholder for cenwaves that are not commissioned at a given LP. *POS TARG Y offset = 144 steps with 21 steps/" --> -6.857" (negative since the aperture block movement has a different sign than the POS TARG Y movement)* *NOTE: the absolute LP11 position is different by ~ 0.1" when moving to it from LP1 vs LP3. This is true for a variety of reasons (e.g., different plate scale; different selection of zero point at each LP and rounding, etc.), but a difference of this magnitude is still within the non-vignetted range so should be fine.*								
6	Adjust Focus by -1300	NONE	COS, ALIGN/OSM		FOCUS=-1300		Sequence 1-17 Non-Int in G140L/800 Scenario 1 (02)	0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: FOCUS is the value is relative to the starting point; value entered as FOCUS in APT is the difference added to the original focus to get to the absolute focus value you want. *Since the starting focus is -999; new focus value = -2299*								
7	Exposure at FOCUS = -2299 (COS.sp.2225285)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 800 A	LIFETIME-POS=LP1; FP-POS=3; BUFFER-TIME=190; SEGMENT=A	POS TARG null,-6.857	Sequence 1-17 Non-Int in G140L/800 Scenario 1 (02)	150 Secs (150 Secs) *[==>]*	***[1]***

8	Adjust Focus by -500	NONE	COS, ALIGN/OSM		FOCUS=-500		Sequence 1-17 Non-Int in G140L/800 Scenario 1 (02)	0 Secs (0 Secs) *[==>]*		
Comments: Original focus = -999; new focus = -1499										
9	Exposure at -1499 (COS.sp.2225285)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 800 A	LIFETIME-POS=LP1; FP-POS=3; BUFFER-TIME=190; SEGMENT=A	POS TARG null,-6.857	Sequence 1-17 Non-Int in G140L/800 Scenario 1 (02)	150 Secs (150 Secs) *[==>]*		
10	Adjust Focus by +700	NONE	COS, ALIGN/OSM		FOCUS=700		Sequence 1-17 Non-Int in G140L/800 Scenario 1 (02)	0 Secs (0 Secs) *[==>]*		
Comments: original focus = -999; new focus = -299										
11	Exposure at -299 (COS.sp.2225285)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 800 A	LIFETIME-POS=LP1; FP-POS=3; BUFFER-TIME=190; SEGMENT=A	POS TARG null,-6.857	Sequence 1-17 Non-Int in G140L/800 Scenario 1 (02)	150 Secs (150 Secs) *[==>]*		
12	Adjust Focus by +1300	NONE	COS, ALIGN/OSM		FOCUS=1300		Sequence 1-17 Non-Int in G140L/800 Scenario 1 (02)	0 Secs (0 Secs) *[==>]*		
Comments: original focus = -999; new focus = +301										
13	Exposure at +301 (COS.sp.2225285)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 800 A	LIFETIME-POS=LP1; FP-POS=3; BUFFER-TIME=190; SEGMENT=A	POS TARG null,-6.857	Sequence 1-17 Non-Int in G140L/800 Scenario 1 (02)	150 Secs (150 Secs) *[==>]*		
14	Adjust Focus by +2000	NONE	COS, ALIGN/OSM		FOCUS=2000		Sequence 1-17 Non-Int in G140L/800 Scenario 1 (02)	0 Secs (0 Secs) *[==>]*		
Comments: original focus = -999; new focus = +1001										
15	Exposure at +1001 (COS.sp.2225285)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 800 A	LIFETIME-POS=LP1; FP-POS=3; BUFFER-TIME=190; SEGMENT=A	POS TARG null,-6.857	Sequence 1-17 Non-Int in G140L/800 Scenario 1 (02)	150 Secs (150 Secs) *[==>]*		
16	Return aperture block	NONE	COS, ALIGN/APER		XAPER=0	QESIPARM XSTEPS -144	Sequence 1-17 Non-Int in G140L/800 Scenario 1 (02)	0.0 Secs (0 Secs) *[==>]*		
Comments: Returning aperture block to nominal LP3 position. Original move was +144 steps so XAPER = 0 and XSTEPS = -144.										
17	Return focus to 0	NONE	COS, ALIGN/OSM		FOCUS=0		Sequence 1-17 Non-Int in G140L/800 Scenario 1 (02)	0 Secs (0 Secs) *[==>]*		

Orbit Structure



Visit

Proposal 18212, G140L/800 Scenario 2 (04), implementation Mon Nov 24 12:00:23 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: COS, COS/FUV, COS/NUV

Special Requirements: (none)

Comments: Visit on hold unless GSFC gives permission to temporarily patch the LP1 G140L/800 flight software focus from -999 to -400.

Diagnostics

(G140L/800 Scenario 2 (04)) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions at a given COS cenwave (or 2 positions for certain exception cases). See extended explanation in the diagnostic browser.

(G140L/800 Scenario 2 (04)) Warning (Orbit Planner): COS EXPOSURE TIME ROUNDED DOWN TO NEAREST 0.1 SECONDS

(G140L/800 Scenario 2 (04)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

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Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	AV75	RA: 00 50 32.4051 (12.6350213d)	Proper Motion RA: 0.746 mas/yr	V=12.756	Reference Frame: ICRS
	Alt Name1: LIN-156	Dec: -72 52 36.44 (-72.87679d)	Proper Motion Dec: -1.255999950444675 mas/yr		
		Equinox: J2000	Parallax: 2.04E-5"		
			Epoch of Position: 2000		

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

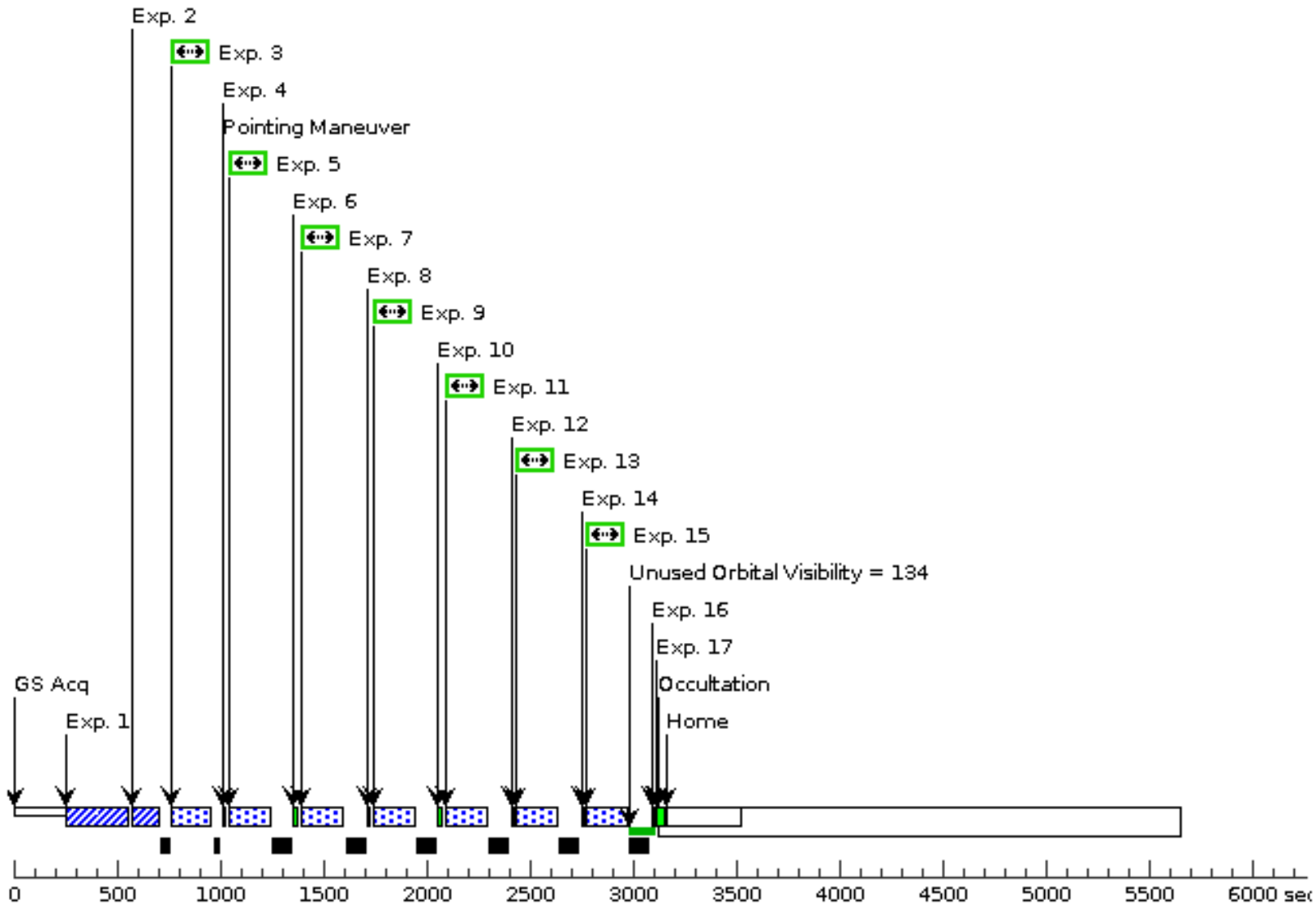
SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=STAR
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 BOA (COS.ta.2225283)	(1) AV75	COS/NUV, ACQ/SEARCH, BOA	MIRRORA	STEP-SIZE=1.767; SCAN-SIZE=2; CENTER=FLUX-WT	GS ACQ SCENARIO BASE1OR	Sequence 1-17 Non-Int in G140L/800 Scenario 2 (04)	7.3 Secs (7.3 Secs) *[==>]*	*[1]*
2	ACQ/IMAGE BOA (COS.ta.2225264)	(1) AV75	COS/NUV, ACQ/IMAGE, BOA	MIRRORA			Sequence 1-17 Non-Int in G140L/800 Scenario 2 (04)	12 Secs (12 Secs) *[==>]*	*[1]*
Comments: TA information taken from PID 16467. The ACQ/SEARCH step is skipped since the Gaia coordinates should be accurate.									
3	Initialization Exposure at LP1 (COS.sp.2225285)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 800 A	LIFETIME-POS=LP1; SEGMENT=A; FP-POS=3; BUFFER-TIME=80; FLASH=NO; WAVECAL=NO		Sequence 1-17 Non-Int in G140L/800 Scenario 2 (04)	0.1 Secs (0.1 Secs) *[==>]*	*[1]*
4	Move aperture from LP1 to LP11 position	NONE	COS, ALIGN/APER		XAPER=144		Sequence 1-17 Non-Int in G140L/800 Scenario 2 (04)	0.0 Secs (0 Secs) *[==>]*	*[1]*
Comments: LAPXSTP for PSA at LP1 is +126 *LAPXSTP for PSA at LP11 was determined to be +270 steps (closest safe approach to the soft stop)* *XAPER = desired position - current position* *XAPER = +270 - +126 = +144*									
5	Focus exposure at nomial value of -400 (COS.sp.2225285)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 800 A	LIFETIME-POS=LP1; FP-POS=3; BUFFER-TIME=190; SEGMENT=A	POS TARG null,-6.857	Sequence 1-17 Non-Int in G140L/800 Scenario 2 (04)	150 Secs (150 Secs) *[==>]*	*[1]*
Comments: Nominal focus value for LP1 for G140L/800 is -999. Note that this is simply the default placeholder for cenwaves that are not commissioned at a given LP. *POS TARG Y offset = 144 steps with 21 steps/" --> -6.857" (negative since the aperture block movement has a different sign than the POS TARG Y movement)*									
6	Adjust Focus by -1300	NONE	COS, ALIGN/OSM		FOCUS=-1300		Sequence 1-17 Non-Int in G140L/800 Scenario 2 (04)	0 Secs (0 Secs) *[==>]*	*[1]*
Comments: FOCUS is the value is relative to the starting point; value entered as FOCUS in APT is the difference added to the original focus to get to the absolute focus value you want. *Since the starting focus is -400; new focus value = -1700*									
7	Exposure at FOCUS = -1700 (COS.sp.2225285)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 800 A	LIFETIME-POS=LP1; FP-POS=3; BUFFER-TIME=190; SEGMENT=A	POS TARG null,-6.857	Sequence 1-17 Non-Int in G140L/800 Scenario 2 (04)	150 Secs (150 Secs) *[==>]*	*[1]*
8	Adjust Focus by -500	NONE	COS, ALIGN/OSM		FOCUS=-500		Sequence 1-17 Non-Int in G140L/800 Scenario 2 (04)	0 Secs (0 Secs) *[==>]*	*[1]*
Comments: Original focus = -400; new focus = -900									

9	Exposure at -900 (COS.sp.2225285)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 800 A	LIFETIME-POS=LP1; FP-POS=3; BUFFER-TIME=190; SEGMENT=A	POS TARG null,-6.857	Sequence 1-17 Non-Int in G140L/800 Scenario 2 (04)	150 Secs (150 Secs) *[==>]*	***[1]***
10	Adjust Focus by +700	NONE	COS, ALIGN/OSM		FOCUS=700		Sequence 1-17 Non-Int in G140L/800 Scenario 2 (04)	0 Secs (0 Secs) *[==>]*	***[1]***
Comments: original focus = -400; new focus = +300									
11	Exposure at +300 (COS.sp.2225285)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 800 A	LIFETIME-POS=LP1; FP-POS=3; BUFFER-TIME=190; SEGMENT=A	POS TARG null,-6.857	Sequence 1-17 Non-Int in G140L/800 Scenario 2 (04)	150 Secs (150 Secs) *[==>]*	***[1]***
12	Adjust Focus by +1300	NONE	COS, ALIGN/OSM		FOCUS=1300		Sequence 1-17 Non-Int in G140L/800 Scenario 2 (04)	0 Secs (0 Secs) *[==>]*	***[1]***
Comments: original focus = -400; new focus = +900									
13	Exposure at +900 (COS.sp.2225285)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 800 A	LIFETIME-POS=LP1; FP-POS=3; BUFFER-TIME=190; SEGMENT=A	POS TARG null,-6.857	Sequence 1-17 Non-Int in G140L/800 Scenario 2 (04)	150 Secs (150 Secs) *[==>]*	***[1]***
14	Adjust Focus by +2000	NONE	COS, ALIGN/OSM		FOCUS=2000		Sequence 1-17 Non-Int in G140L/800 Scenario 2 (04)	0 Secs (0 Secs) *[==>]*	***[1]***
Comments: original focus = -400; new focus = +1600									
15	Exposure at +1600 (COS.sp.2225285)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 800 A	LIFETIME-POS=LP1; FP-POS=3; BUFFER-TIME=190; SEGMENT=A	POS TARG null,-6.857	Sequence 1-17 Non-Int in G140L/800 Scenario 2 (04)	150 Secs (150 Secs) *[==>]*	***[1]***
16	Return aperture block	NONE	COS, ALIGN/APER		XAPER=0	QESIPARM XSTEPS -144	Sequence 1-17 Non-Int in G140L/800 Scenario 2 (04)	0.0 Secs (0 Secs) *[==>]*	***[1]***
Comments: Returning aperture block to nominal LP3 position. Original move was +144 steps so XAPER = 0 and XSTEPS = -144.									
17	Return focus to 0	NONE	COS, ALIGN/OSM		FOCUS=0		Sequence 1-17 Non-Int in G140L/800 Scenario 2 (04)	0 Secs (0 Secs) *[==>]*	***[1]***

Orbit Structure



Proposal 18212 - G140L/1105 (03) - LP11 Coarse Focus Run

Visit

Proposal 18212, G140L/1105 (03), implementation Mon Nov 24 12:00:23 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: COS, COS/FUV, COS/NUV

Special Requirements: (none)

Diagnostics

(G140L/1105 (03)) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions at a given COS cenwave (or 2 positions for certain exception cases). See extended explanation in the diagnostic browser.

(G140L/1105 (03)) Warning (Orbit Planner): COS EXPOSURE TIME ROUNDED DOWN TO NEAREST 0.1 SECONDS

(G140L/1105 (03)) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

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Fixed Targets

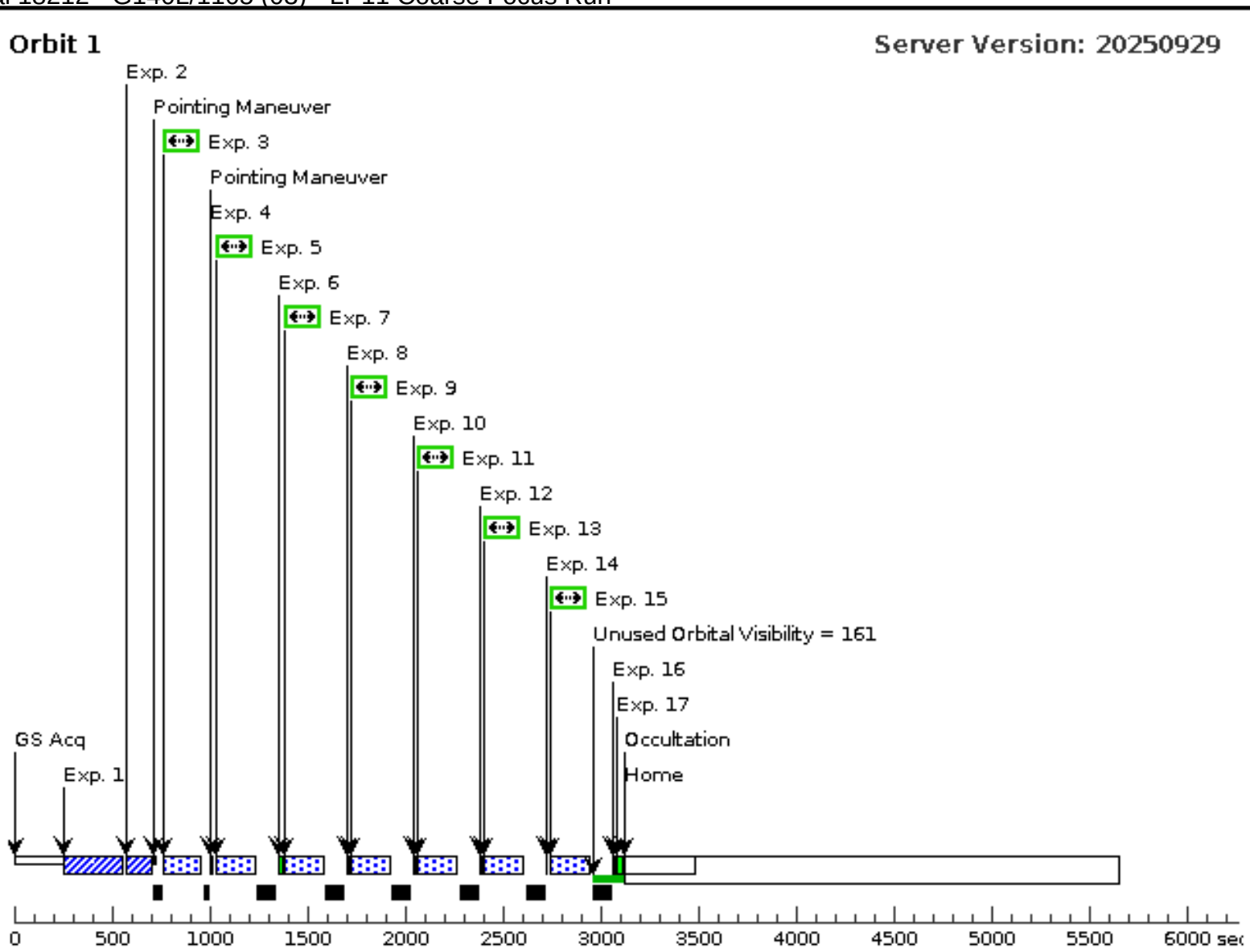
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	AV75	RA: 00 50 32.4051 (12.6350213d)	Proper Motion RA: 0.746 mas/yr	V=12.756	Reference Frame: ICRS
	Alt Name1: LIN-156	Dec: -72 52 36.44 (-72.87679d)	Proper Motion Dec: -1.255999950444675 mas/yr		
		Equinox: J2000	Parallax: 2.04E-5"		
			Epoch of Position: 2000		

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
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 BOA (COS.ta.2225283)	(1) AV75	COS/NUV, ACQ/SEARCH, BOA	MIRRORA	STEP-SIZE=1.767; SCAN-SIZE=2; CENTER=FLUX-WT	GS ACQ SCENARIO BASE1OR	Sequence 1-17 Non-Int in G140L/1105 (03)	7.3 Secs (7.3 Secs) *[==>]*	***[1]***
2	ACQ/IMAGE BOA (COS.ta.2225264)	(1) AV75	COS/NUV, ACQ/IMAGE, BOA	MIRRORA			Sequence 1-17 Non-Int in G140L/1105 (03)	12 Secs (12 Secs) *[==>]*	***[1]***
	Comments: TA information taken from PID 16467. The ACQ/SEARCH step is skipped since the Gaia coordinates should be accurate.								
3	Initialization Exposure at LP3 (COS.sp.2225286)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 1105 A	LIFETIME-POS=LP3; SEGMENT=A; FP-POS=3; BUFFER-TIME=80; FLASH=NO; WAVECAL=NO		Sequence 1-17 Non-Int in G140L/1105 (03)	0.1 Secs (0.1 Secs) *[==>]*	***[1]***
4	Move aperture from LP3 to LP11 position	NONE	COS, ALIGN/APER		XAPER=89		Sequence 1-17 Non-Int in G140L/1105 (03)	0.0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: LAPXSTP for PSA at LP3 is +181 *LAPXSTP for PSA at LP11 was determined to be +270 steps (closest safe approach to the soft stop)* *XAPER = desired position - current position* *XAPER = +270 - +181 = +89*								
5	Focus exposure at nomial value of -673 (COS.sp.2225286)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 1105 A	LIFETIME-POS=LP3; FP-POS=3; BUFFER-TIME=190; SEGMENT=A	POS TARG null,-4.238	Sequence 1-17 Non-Int in G140L/1105 (03)	150 Secs (150 Secs) *[==>]*	***[1]***
	Comments: Nominal focus value for LP3 for G140L/800 is -673 (source: Dave Sahnow focus value table). This is a bit off from the CODE V best focus of +300.								
6	Adjust Focus by -1000	NONE	COS, ALIGN/OSM		FOCUS=-1000		Sequence 1-17 Non-Int in G140L/1105 (03)	0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: FOCUS is the value is relative to the starting point; value entered as FOCUS in APT is the difference added to the original focus to get to the absolute focus value you want. *Since the starting focus is -673, the absolute focus value here is -1673*								
7	Exposure at FOCUS = -1673 (COS.sp.2225286)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 1105 A	LIFETIME-POS=LP3; FP-POS=3; BUFFER-TIME=190; SEGMENT=A	POS TARG null,-4.238	Sequence 1-17 Non-Int in G140L/1105 (03)	150 Secs (150 Secs) *[==>]*	***[1]***
8	Adjust Focus by -400	NONE	COS, ALIGN/OSM		FOCUS=-400		Sequence 1-17 Non-Int in G140L/1105 (03)	0 Secs (0 Secs) *[==>]*	***[1]***
	Comments: Original focus = -673; new focus = -1073								

9	Exposure at -1073 (COS.sp.22225286)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 1105 A	LIFETIME-POS=LP3; FP-POS=3; BUFFER-TIME=190; SEGMENT=A	POS TARG null,-4.238	Sequence 1-17 Non-Int in G140L/1105 (03)	150 Secs (150 Secs) *[==>]*	***[1]***
10	Adjust Focus by +400	NONE	COS, ALIGN/OSM		FOCUS=400		Sequence 1-17 Non-Int in G140L/1105 (03)	0 Secs (0 Secs) *[==>]*	***[1]***
Comments: original focus = -673; new focus = -273									
11	Exposure at -273 (COS.sp.22225286)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 1105 A	LIFETIME-POS=LP3; FP-POS=3; BUFFER-TIME=190; SEGMENT=A	POS TARG null,-4.238	Sequence 1-17 Non-Int in G140L/1105 (03)	150 Secs (150 Secs) *[==>]*	***[1]***
12	Adjust Focus by +1000	NONE	COS, ALIGN/OSM		FOCUS=1000		Sequence 1-17 Non-Int in G140L/1105 (03)	0 Secs (0 Secs) *[==>]*	***[1]***
Comments: original focus = -673; new focus = +327									
13	Exposure at +327 (COS.sp.22225286)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 1105 A	LIFETIME-POS=LP3; FP-POS=3; BUFFER-TIME=190; SEGMENT=A	POS TARG null,-4.238	Sequence 1-17 Non-Int in G140L/1105 (03)	150 Secs (150 Secs) *[==>]*	***[1]***
14	Adjust Focus by +1500	NONE	COS, ALIGN/OSM		FOCUS=1500		Sequence 1-17 Non-Int in G140L/1105 (03)	0 Secs (0 Secs) *[==>]*	***[1]***
Comments: original focus = -673; new focus = +827									
15	Exposure at +827 (COS.sp.22225286)	(1) AV75	COS/FUV, TIME-TAG, PSA	G140L 1105 A	LIFETIME-POS=LP3; FP-POS=3; BUFFER-TIME=190; SEGMENT=A	POS TARG null,-4.238	Sequence 1-17 Non-Int in G140L/1105 (03)	150 Secs (150 Secs) *[==>]*	***[1]***
16	Return aperture block	NONE	COS, ALIGN/APER		XAPER=0	QESIPARM XSTEPS -89	Sequence 1-17 Non-Int in G140L/1105 (03)	0.0 Secs (0 Secs) *[==>]*	***[1]***
Comments: Returning aperture block to nominal LP3 position. Original move was +89 steps so XAPER = 0 and XSTEPS = -89.									
17	Return focus to 0	NONE	COS, ALIGN/OSM		FOCUS=0		Sequence 1-17 Non-Int in G140L/1105 (03)	0 Secs (0 Secs) *[==>]*	***[1]***

Orbit Structure