



## 18235 - Rocky Worlds DDT: HST Observations of TOI-198

Cycle: 33, Proposal Category: GO

(Availability Mode: SUPPORTED)

### INVESTIGATORS

<i>Name</i>	<i>Institution</i>
<b>Dr. Hannah Diamond-Lowe (PI) (Contact)</b>	<b>Space Telescope Science Institute</b>
Dr. Nestor Espinoza (CoI) (CoPI)	Space Telescope Science Institute
Dr. John Henry Debes (CoI) (ESA Member)	Space Telescope Science Institute - ESA - JWST
Dr. Leonardo Dos Santos (CoI)	Space Telescope Science Institute
Dr. Munazza Alam (CoI)	Space Telescope Science Institute
Rachel Cooper (CoI)	Space Telescope Science Institute
Tyler Baines (CoI)	Space Telescope Science Institute
Taylor James Bell (CoI) (ESA Member)	Space Telescope Science Institute - ESA - JWST
Dr. Brett M. Morris (CoI)	Space Telescope Science Institute
Dr. Leonardo Ubeda (CoI)	Space Telescope Science Institute
Dr. Ian Wong (CoI)	Space Telescope Science Institute
Dr. Joshua D. Lothringer (CoI)	Space Telescope Science Institute
Ms. Misty Cracraft (CoI)	Space Telescope Science Institute
Dr. Joseph Filippazzo (CoI)	Space Telescope Science Institute
Mr. Douglas Ray Long (CoI)	Space Telescope Science Institute
Dr. Achrene Dyrek (CoI) (ESA Member)	Space Telescope Science Institute - ESA - JWST
Dr. Elena Manjavacas (CoI) (ESA Member)	Space Telescope Science Institute - ESA - JWST
Mees Fix (CoI)	Space Telescope Science Institute
Dr. Christopher Britt (CoI)	Space Telescope Science Institute
Hannah Braun (CoI)	Space Telescope Science Institute
Ryan Kunzer (CoI)	Space Telescope Science Institute
Kyle Conroy (CoI)	Space Telescope Science Institute

<i>Name</i>	<i>Institution</i>
Dr. Mercedes Lopez-Morales (CoI)	Space Telescope Science Institute
Dr. I. Neill Reid (CoI)	Space Telescope Science Institute

**VISITS**

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
01	(1) LHS-1140 WAVE	STIS/CCD STIS/NUV-MAMA	2	06-Mar-2026 14:00:15.0	yes
02	(1) LHS-1140 CCDFLAT WAVE	STIS/CCD	1	06-Mar-2026 14:00:15.0	yes
03	(1) LHS-1140	COS/FUV COS/NUV	4	06-Mar-2026 14:00:16.0	yes
04	(1) LHS-1140	COS/FUV COS/NUV	4	06-Mar-2026 14:00:17.0	yes
05	(1) LHS-1140	COS/FUV COS/NUV	4	06-Mar-2026 14:00:19.0	yes
06	(1) LHS-1140	COS/FUV COS/NUV	4	06-Mar-2026 14:00:20.0	yes

19 Total Orbits Used

**ABSTRACT**

Rocky Worlds is a joint JWST and HST Director's Discretionary Program designed to implement the top recommendations from the Working Group on Strategic Exoplanet Initiatives with HST and JWST. The HST side of the Rocky Worlds DDT focuses on ultraviolet (UV) characterization of the nearby M-dwarf hosts of the rocky planets observed with JWST. We will use COS and STIS to measure the UV to blue-optical spectra of these stars, including UV flare monitoring and measuring the wings of the Ly-alpha profile where appropriate. With these observations we will constrain the high-energy output of these host M dwarfs in the UV, which can be applied to planetary models of atmospheric escape, as well as photochemistry if a planetary atmosphere is present. Complementary observations and analysis to fill in the rest of the M-dwarf panchromatic spectra, from the X-ray to the infrared, are encouraged.

Each M-dwarf planet host observed by HST in the Rocky Worlds DDT program has its own Program ID. The observations in this program will focus on LHS 1140.

### **OBSERVING DESCRIPTION**

HST observations of LHS 1140. 16 orbits of flare monitoring using G130M/1222. We obtain NUV/Vis low resolution spectroscopy with STIS G230L, G430L, and G750L and the 52x0.2 slit in order to construct an accurate stellar SED and leverage the Mg II 2800 emission lines to tie to archival observations. All UV observations are obtained in time-tag mode to allow for light curves to be generated in the case of a flare or serendipitous transit.

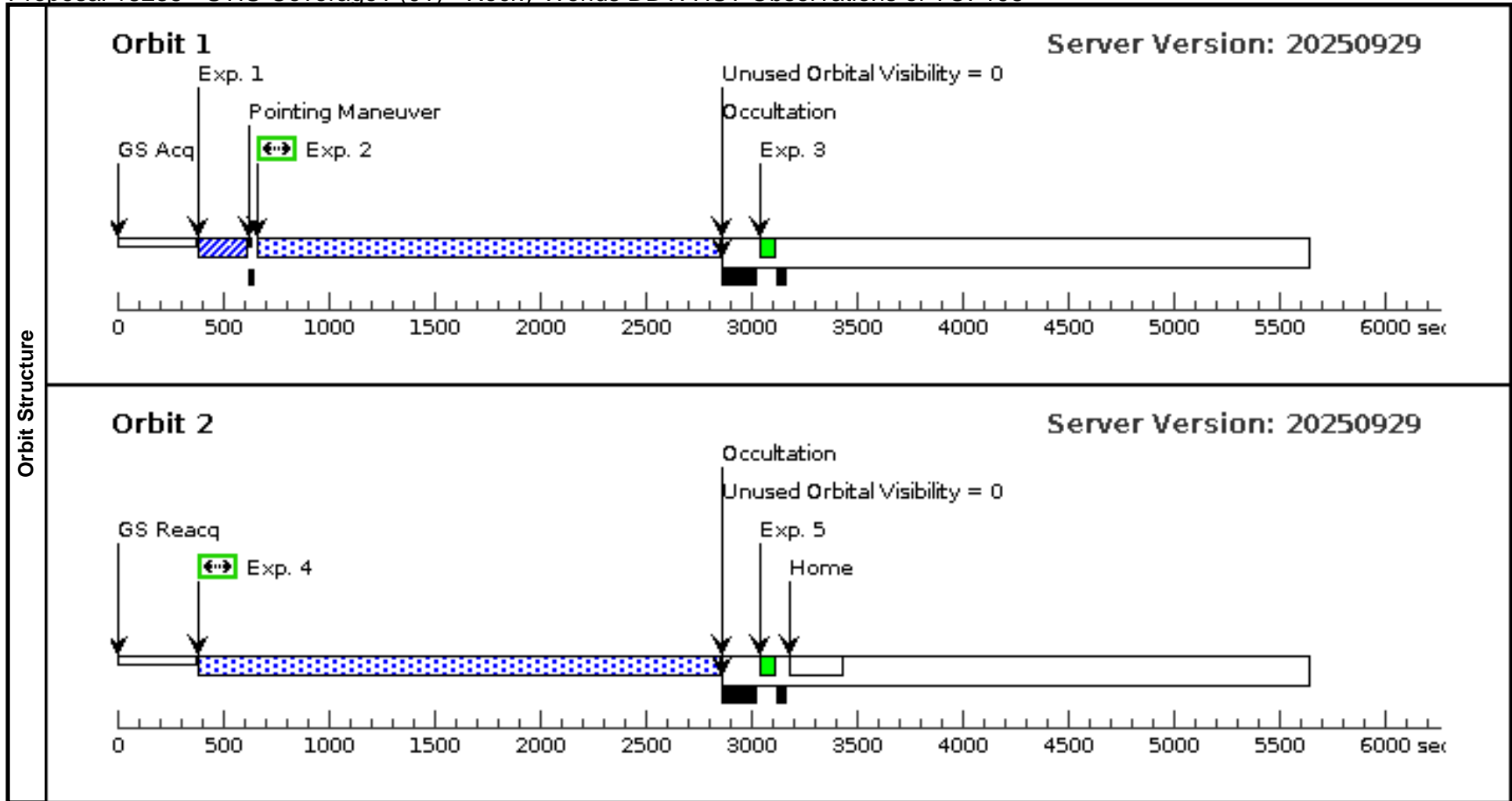
For all observations we used previous observations of LHS 1140 with COS and STIS to determine exposure times. These observations mimic characterization of other M dwarfs from previous programs.

Note on Target ACQ: We placed a timing constraint on the G130M flare monitoring so that the CIT has time to assess blind pointing accuracy given the high overhead on acquisitions. Subsequent flare monitoring visits may be updated.

Proposal 18235 - STIS-Coverage1 (01) - Rocky Worlds DDT: HST Observations of TOI-198

Fri Mar 06 19:00:20 GMT 2026

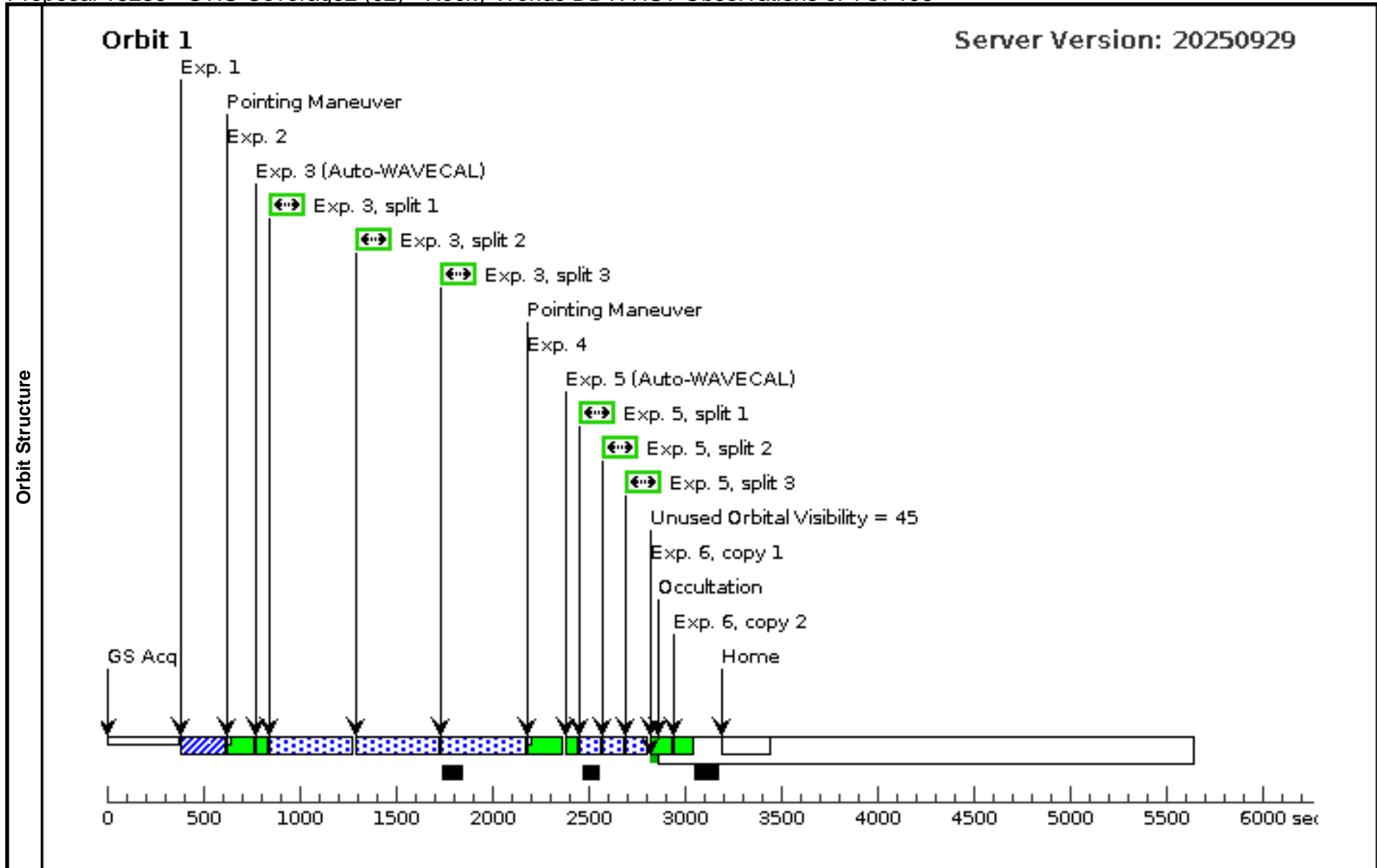
Visit	<b>Proposal 18235, STIS-Coverage1 (01)</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: STIS/NUV-MAMA, STIS/CCD Special Requirements: SCHED 100% <i>Comments: UV characterization</i>									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
		(1)	LHS-1140 Alt Name1: G-268-38	RA: 00 44 59.6827 (11.2486779d) Dec: -15 16 27.09 (-15.27419d) Equinox: J2000	Proper Motion RA: 318.152 mas/yr Proper Motion Dec: -596.623 mas/yr Parallax: 0.066828" Epoch of Position: 2016.0	V=14.15 G =12.653	Reference Frame: ICRS			
	<i>Comments: Gaia DR3 coordinates double checked 12/18/2025</i> <i>Fluxes double checked 02/12/2026</i> Category=STAR Description=[EXTRA-SOLAR PLANETARY SYSTEM, M 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	Acquisition (STIS.ta.227 8862)	(1) LHS-1140	STIS/CCD, ACQ, F28X50LP	MIRROR				0.2 Secs (0.2 Secs) [==>]	[1]
	2	G230L exp1 (STIS.sp.22 47026)	(1) LHS-1140	STIS/NUV-MAMA, TIME-TAG, 52X0.2	G230L 2376 A	BUFFER-TIME=16 20; WAVECAL=NO			2063 Secs (2063 Secs) [==>]	[1]
	3	WAVECAL WAVE		STIS/NUV-MAMA, ACCUM, 52X0.2	G230L 2376 A				[==>]	[1]
	4	G230L exp2 (STIS.sp.22 47026)	(1) LHS-1140	STIS/NUV-MAMA, TIME-TAG, 52X0.2	G230L 2376 A	BUFFER-TIME=16 20; WAVECAL=NO			2458 Secs (2458 Secs) [==>]	[2]
	5	WAVECAL WAVE -G230L		STIS/NUV-MAMA, ACCUM, 52X0.2	G230L 2376 A				[==>]	[2]



Proposal 18235 - STIS-Coverage2 (02) - Rocky Worlds DDT: HST Observations of TOI-198

Fri Mar 06 19:00:21 GMT 2026

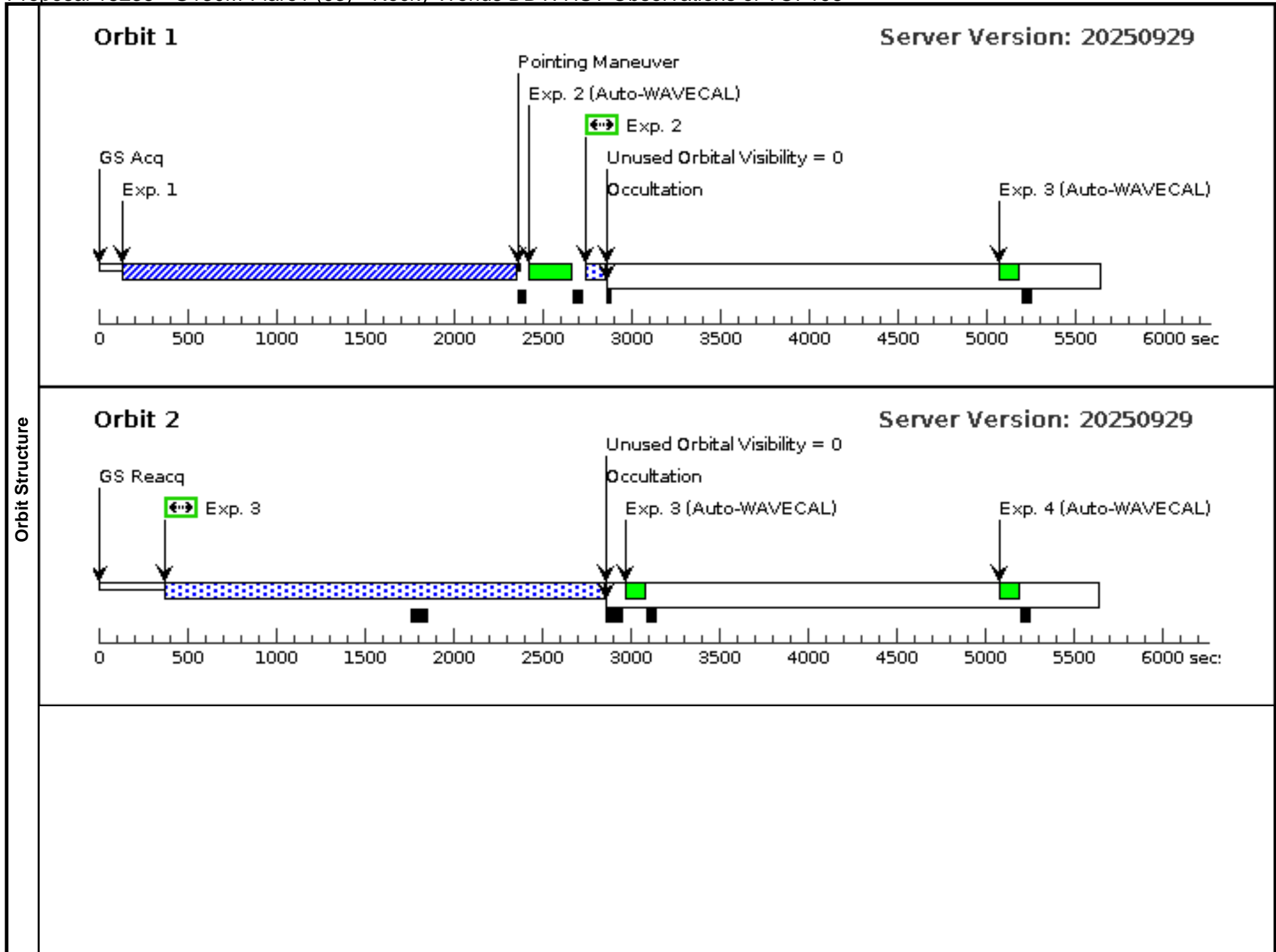
Visit	<b>Proposal 18235, STIS-Coverage2 (02)</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: STIS/CCD Special Requirements: SCHED 100% <i>Comments: Vis characterization</i>									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
		(1)	LHS-1140 Alt Name1: G-268-38	RA: 00 44 59.6827 (11.2486779d) Dec: -15 16 27.09 (-15.27419d) Equinox: J2000	Proper Motion RA: 318.152 mas/yr Proper Motion Dec: -596.623 mas/yr Parallax: 0.066828" Epoch of Position: 2016.0	V=14.15 G =12.653	Reference Frame: ICRS			
	<i>Comments: Gaia DR3 coordinates double checked 12/18/2025</i> <i>Fluxes double checked 02/12/2026</i> Category=STAR Description=[EXTRA-SOLAR PLANETARY SYSTEM, M 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	Acquisition (STIS.ta.227 8862)	(1) LHS-1140	STIS/CCD, ACQ, F28X50LP	MIRROR				0.2 Secs (0.2 Secs) [==>]	[1]
	2	WAVECAL -G430L	WAVE	STIS/CCD, ACCUM, 52X0.2	G430L 4300 A				[==>]	[1]
	3	G430L (STIS.sp.22 78865)	(1) LHS-1140	STIS/CCD, ACCUM, 52X0.2E1	G430L 4300 A	CR-SPLIT=3			1200 Secs (1200 Secs) [==>(Split 1)] [==>(Split 2)] [==>(Split 3)]	[1]
	4	WAVECAL -G750L	WAVE	STIS/CCD, ACCUM, 52X0.2	G750L 7751 A				[==>]	[1]
	5	G750L (STIS.sp.22 60533)	(1) LHS-1140	STIS/CCD, ACCUM, 52X0.2	G750L 7751 A	CR-SPLIT=3			228 Secs (228 Secs) [==>(Split 1)] [==>(Split 2)] [==>(Split 3)]	[1]
	6	G750L FringeFlat	CCDFLAT	STIS/CCD, ACCUM, 0.3X0.09	G750L 7751 A				[==>(Copy 1)] [==>(Copy 2)]	[1]

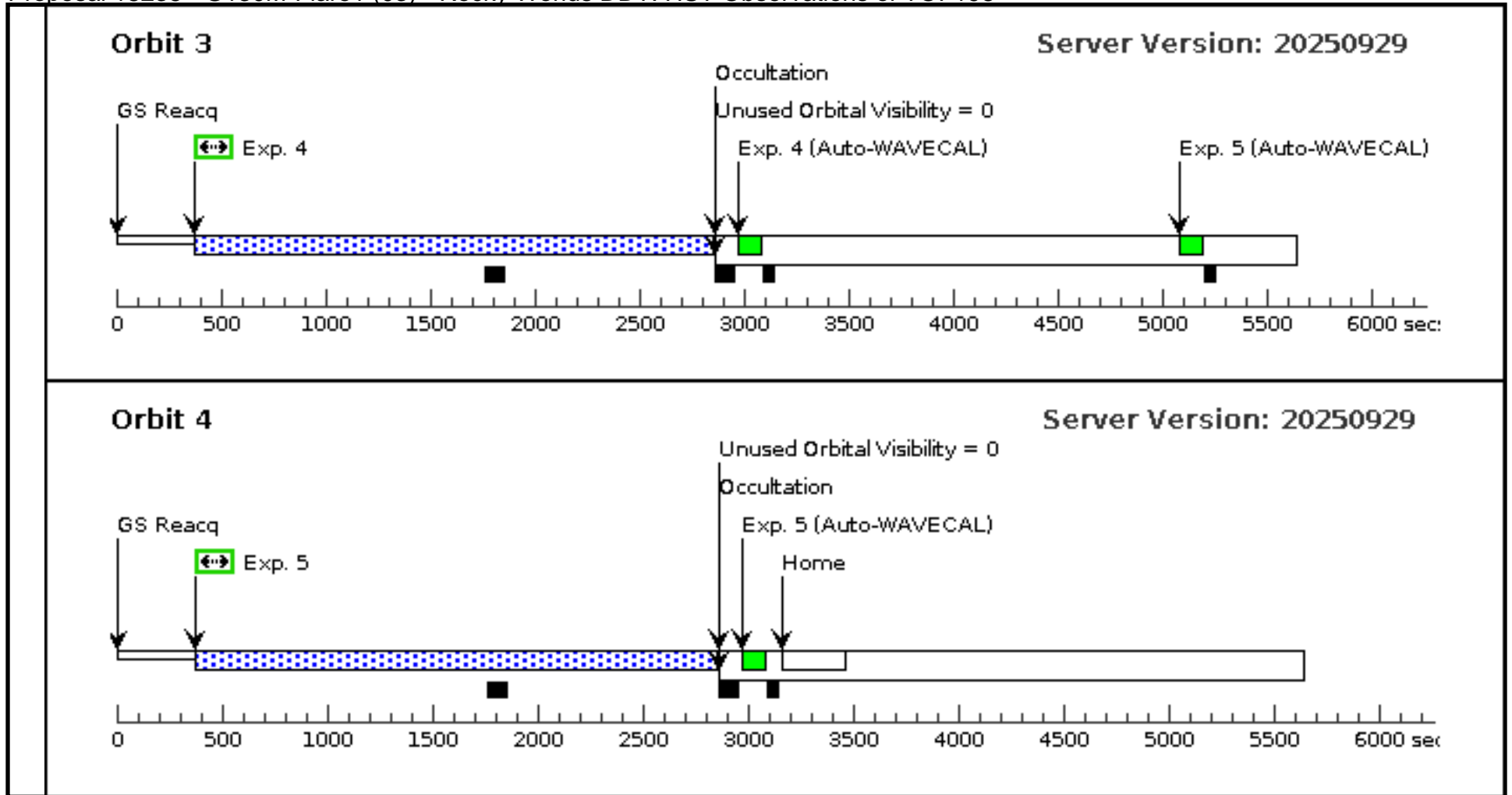


Proposal 18235 - G130M-Flare1 (03) - Rocky Worlds DDT: HST Observations of TOI-198

Fri Mar 06 19:00:21 GMT 2026

Visit	<b>Proposal 18235, G130M-Flare1 (03)</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: COS/FUV, COS/NUV Special Requirements: SCHED 100% <i>Comments: Flare Monitoring</i>									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
		(1)	LHS-1140 Alt Name1: G-268-38	RA: 00 44 59.6827 (11.2486779d) Dec: -15 16 27.09 (-15.27419d) Equinox: J2000	Proper Motion RA: 318.152 mas/yr Proper Motion Dec: -596.623 mas/yr Parallax: 0.066828" Epoch of Position: 2016.0	V=14.15 G =12.653	Reference Frame: ICRS			
	<i>Comments: Gaia DR3 coordinates double checked 12/18/2025</i> <i>Fluxes double checked 02/12/2026</i> Category=STAR Description=[EXTRA-SOLAR PLANETARY SYSTEM, M 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	NUV ACQ/ MIRRORB (COS.ta.202 1012)	(1) LHS-1140	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				957 Secs (957 Secs) [==>]	[1]
	<i>Comments: 2% limitation on emission line lifetimes.</i>									
	2	G130M/122 2-FP2 (COS.sp.202 1319)	(1) LHS-1140	COS/FUV, TIME-TAG, PSA	G130M 1222 A	FP-POS=2; BUFFER-TIME=13 50			56 Secs (56 Secs) [==>]	[1]
	3	G130M/122 2-FP2 (COS.sp.202 1319)	(1) LHS-1140	COS/FUV, TIME-TAG, PSA	G130M 1222 A	FP-POS=2; BUFFER-TIME=13 50			2426 Secs (2426 Secs) [==>]	[2]
	4	G130M/122 2-FP3 (COS.sp.202 1319)	(1) LHS-1140	COS/FUV, TIME-TAG, PSA	G130M 1222 A	FP-POS=3; BUFFER-TIME=13 50			2426 Secs (2426 Secs) [==>]	[3]
	5	G130M/122 2-FP4 (COS.sp.202 1319)	(1) LHS-1140	COS/FUV, TIME-TAG, PSA	G130M 1222 A	FP-POS=4; BUFFER-TIME=13 50			2426 Secs (2426 Secs) [==>]	[4]

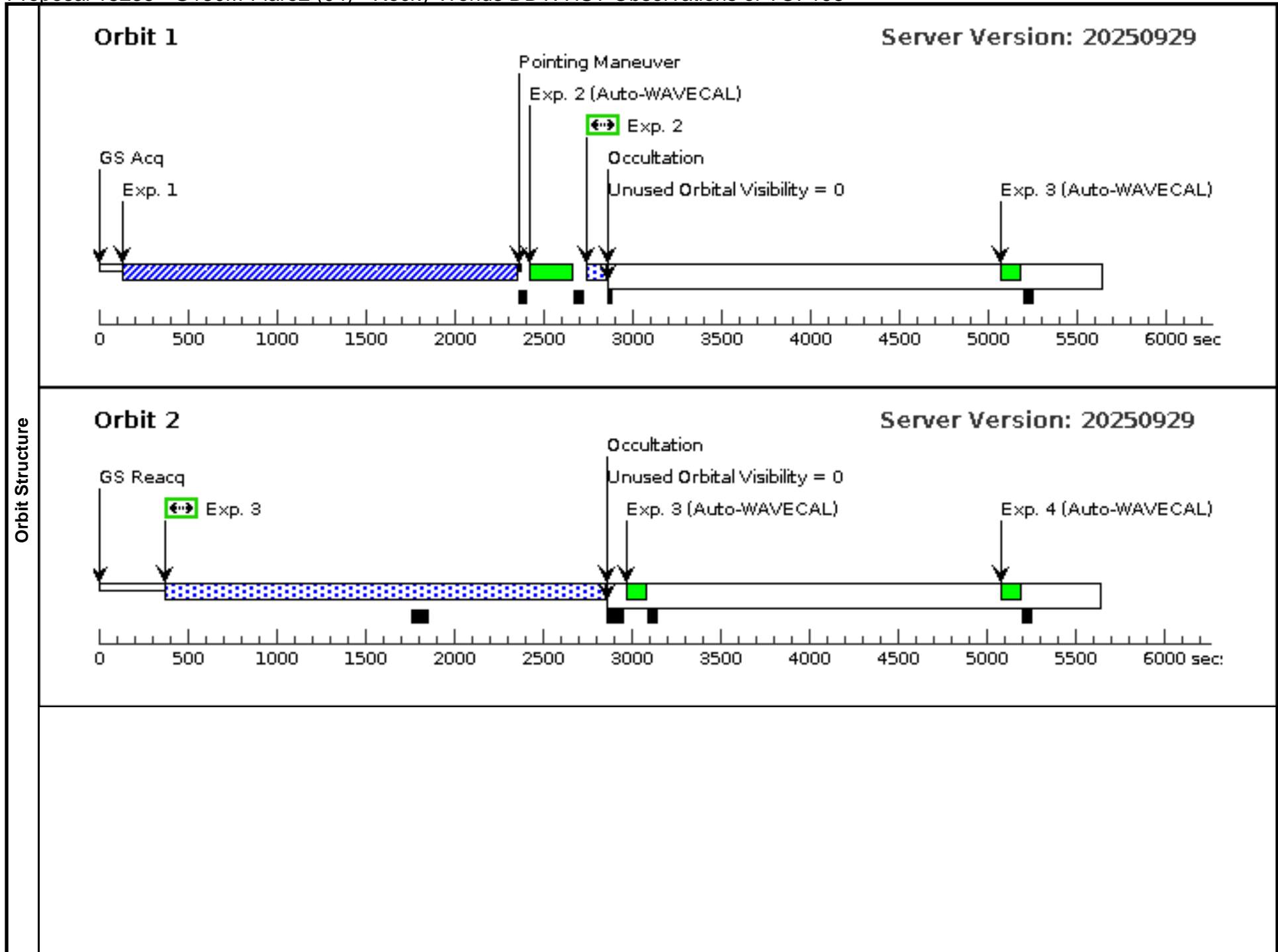




Proposal 18235 - G130M-Flare2 (04) - Rocky Worlds DDT: HST Observations of TOI-198

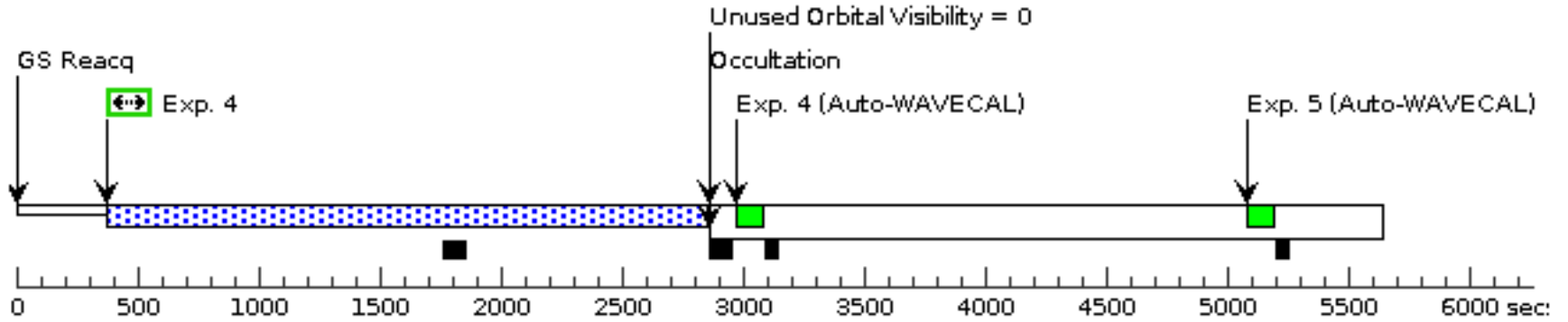
Fri Mar 06 19:00:21 GMT 2026

Visit	<b>Proposal 18235, G130M-Flare2 (04)</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: COS/FUV, COS/NUV Special Requirements: SCHED 100%; AFTER 03 BY 60 D TO 365 D Comments: Flare Monitoring									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
		(1)	LHS-1140 Alt Name1: G-268-38	RA: 00 44 59.6827 (11.2486779d) Dec: -15 16 27.09 (-15.27419d) Equinox: J2000	Proper Motion RA: 318.152 mas/yr Proper Motion Dec: -596.623 mas/yr Parallax: 0.066828" Epoch of Position: 2016.0	V=14.15 G =12.653	Reference Frame: ICRS			
	Comments: Gaia DR3 coordinates double checked 12/18/2025 Fluxes double checked 02/12/2026 Category=STAR Description=[EXTRA-SOLAR PLANETARY SYSTEM, M 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	NUV ACQ/ MIRRORB (COS.ta.202 1012)	(1) LHS-1140	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				957 Secs (957 Secs) [==>]	[1]
	Comments: 2% limitation on emission line lifetimes.									
	2	G130M/122 2-FP1 (COS.sp.202 1319)	(1) LHS-1140	COS/FUV, TIME-TAG, PSA	G130M 1222 A	FP-POS=1; BUFFER-TIME=13 50			56 Secs (56 Secs) [==>]	[1]
	3	G130M/122 2-FP1 (COS.sp.202 1319)	(1) LHS-1140	COS/FUV, TIME-TAG, PSA	G130M 1222 A	FP-POS=1; BUFFER-TIME=13 50			2426 Secs (2426 Secs) [==>]	[2]
	4	G130M/122 2-FP3 (COS.sp.202 1319)	(1) LHS-1140	COS/FUV, TIME-TAG, PSA	G130M 1222 A	FP-POS=3; BUFFER-TIME=13 50			2426 Secs (2426 Secs) [==>]	[3]
	5	G130M/122 2-FP4 (COS.sp.202 1319)	(1) LHS-1140	COS/FUV, TIME-TAG, PSA	G130M 1222 A	FP-POS=4; BUFFER-TIME=13 50			2426 Secs (2426 Secs) [==>]	[4]



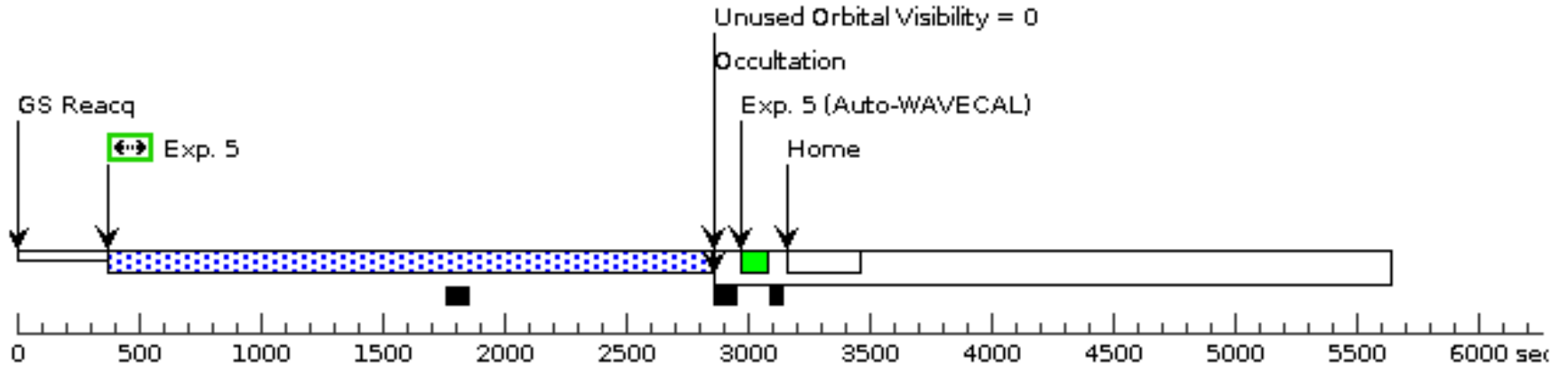
**Orbit 3**

Server Version: 20250929



**Orbit 4**

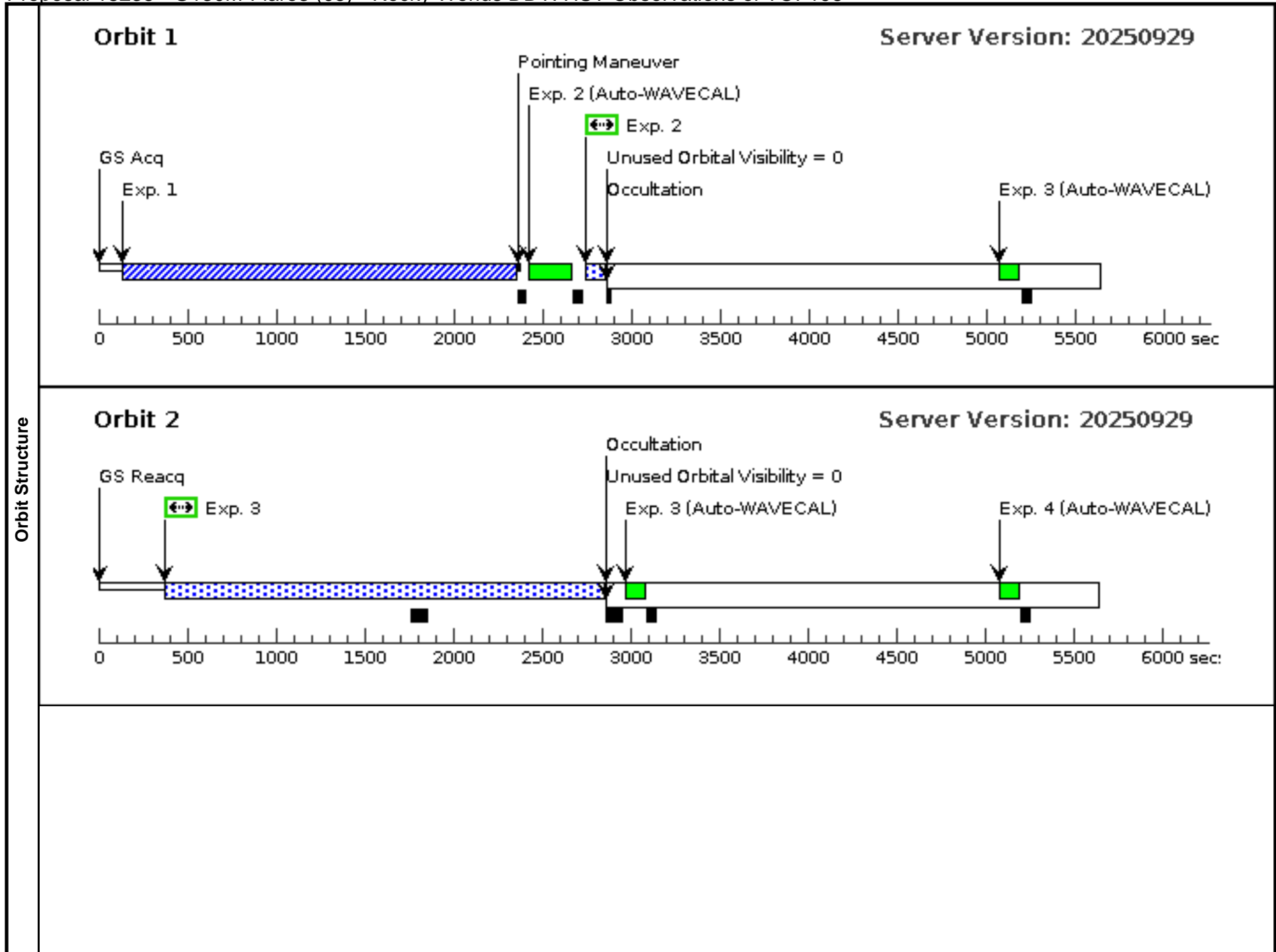
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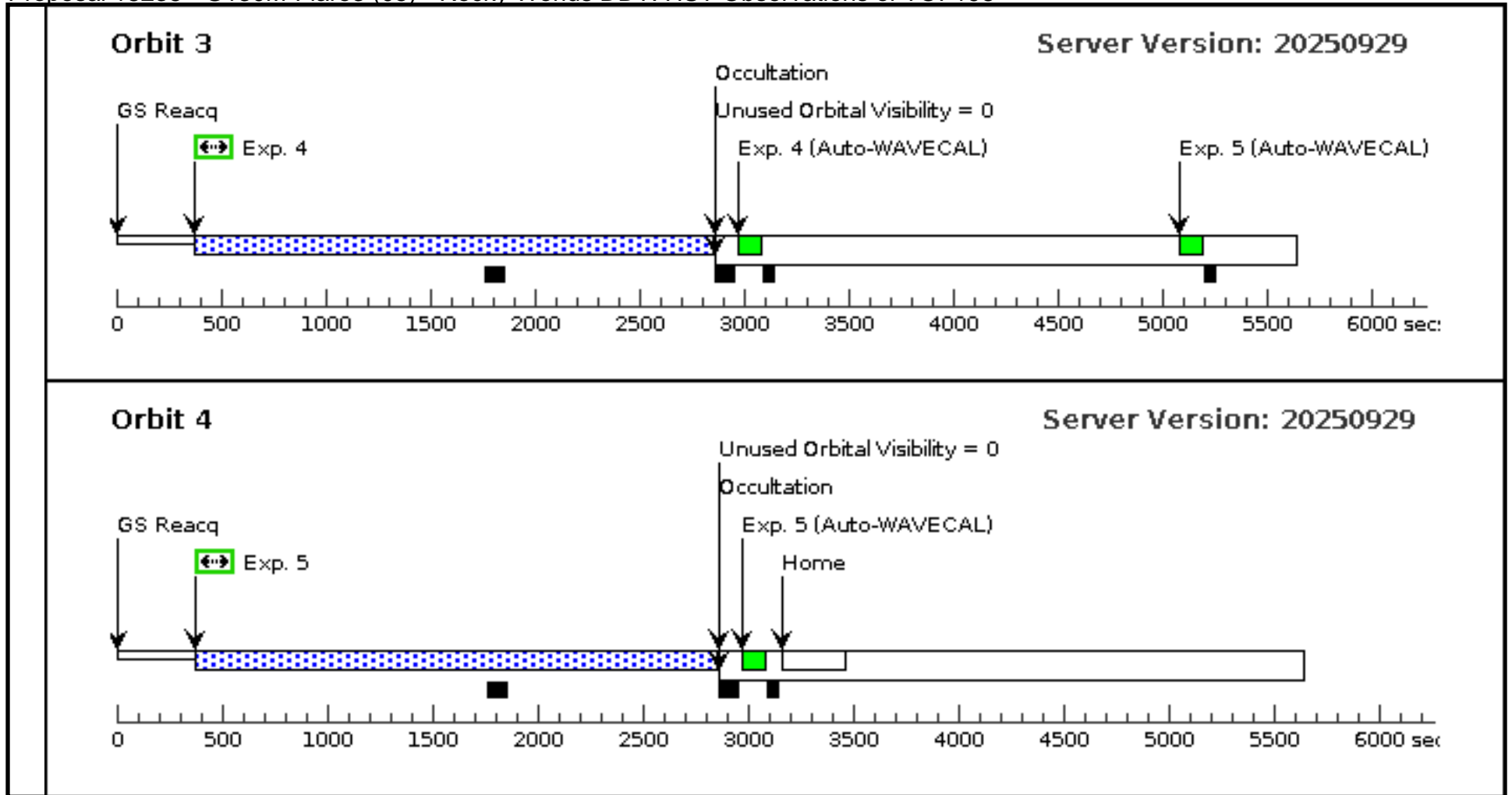


Proposal 18235 - G130M-Flare3 (05) - Rocky Worlds DDT: HST Observations of TOI-198

Fri Mar 06 19:00:21 GMT 2026

Visit	<b>Proposal 18235, G130M-Flare3 (05)</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: COS/FUV, COS/NUV Special Requirements: SCHED 100%; AFTER 03 BY 60 D TO 365 D Comments: Flare Monitoring									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
		(1)	LHS-1140 Alt Name1: G-268-38	RA: 00 44 59.6827 (11.2486779d) Dec: -15 16 27.09 (-15.27419d) Equinox: J2000	Proper Motion RA: 318.152 mas/yr Proper Motion Dec: -596.623 mas/yr Parallax: 0.066828" Epoch of Position: 2016.0	V=14.15 G =12.653	Reference Frame: ICRS			
	Comments: Gaia DR3 coordinates double checked 12/18/2025 Fluxes double checked 02/12/2026 Category=STAR Description=[EXTRA-SOLAR PLANETARY SYSTEM, M 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	NUV ACQ/ MIRRORB (COS.ta.202 1012)	(1) LHS-1140	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				957 Secs (957 Secs) [==>]	[1]
	Comments: 2% limitation on emission line lifetimes.									
	2	G130M/122 2-FP2 (COS.sp.202 1319)	(1) LHS-1140	COS/FUV, TIME-TAG, PSA	G130M 1222 A	FP-POS=2; BUFFER-TIME=13 50			56 Secs (56 Secs) [==>]	[1]
	3	G130M/122 2-FP2 (COS.sp.202 1319)	(1) LHS-1140	COS/FUV, TIME-TAG, PSA	G130M 1222 A	FP-POS=2; BUFFER-TIME=13 50			2426 Secs (2426 Secs) [==>]	[2]
	4	G130M/122 2-FP3 (COS.sp.202 1319)	(1) LHS-1140	COS/FUV, TIME-TAG, PSA	G130M 1222 A	FP-POS=3; BUFFER-TIME=13 50			2426 Secs (2426 Secs) [==>]	[3]
	5	G130M/122 2-FP4 (COS.sp.202 1319)	(1) LHS-1140	COS/FUV, TIME-TAG, PSA	G130M 1222 A	FP-POS=4; BUFFER-TIME=13 50			2426 Secs (2426 Secs) [==>]	[4]

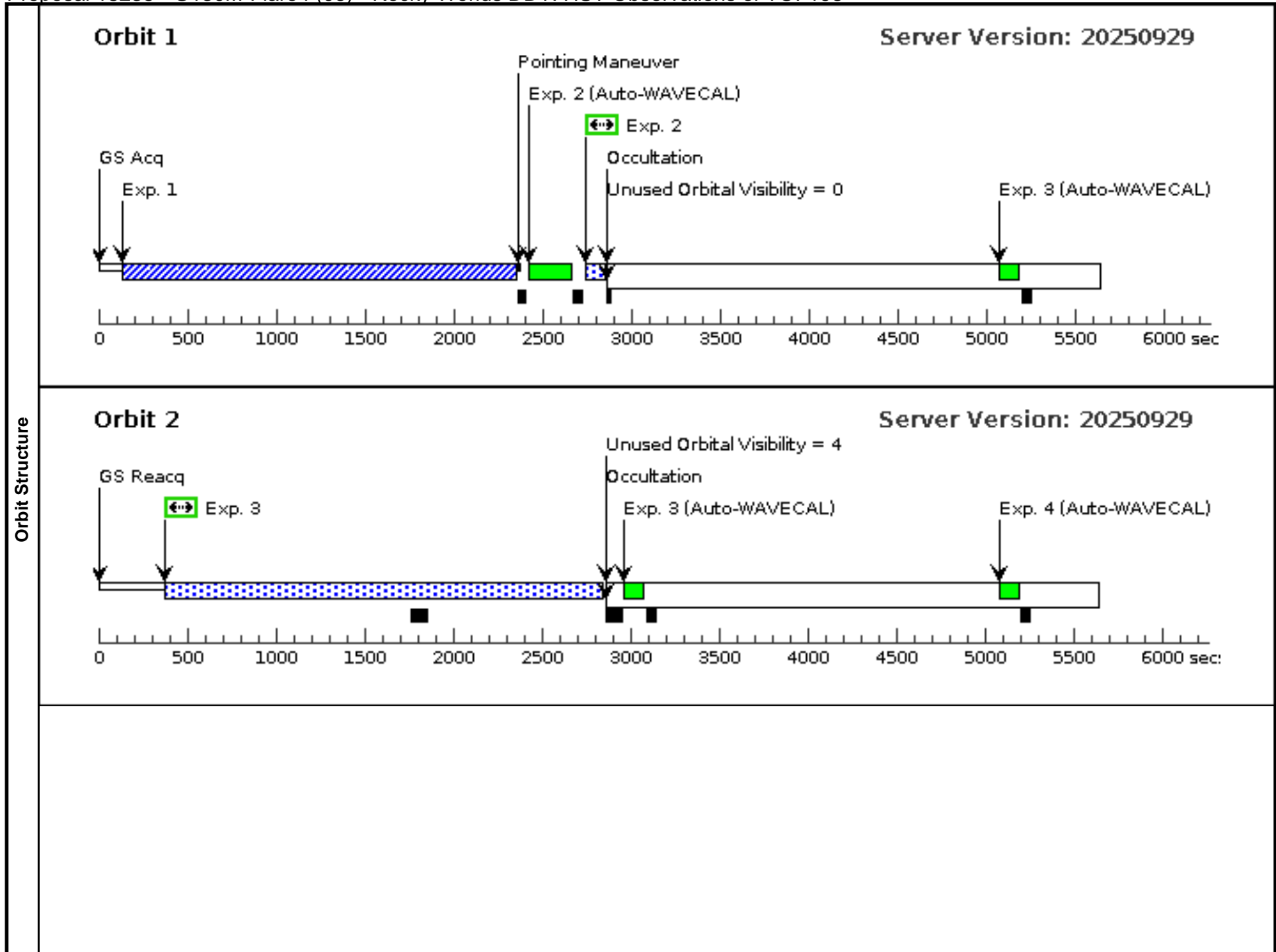




Proposal 18235 - G130M-Flare4 (06) - Rocky Worlds DDT: HST Observations of TOI-198

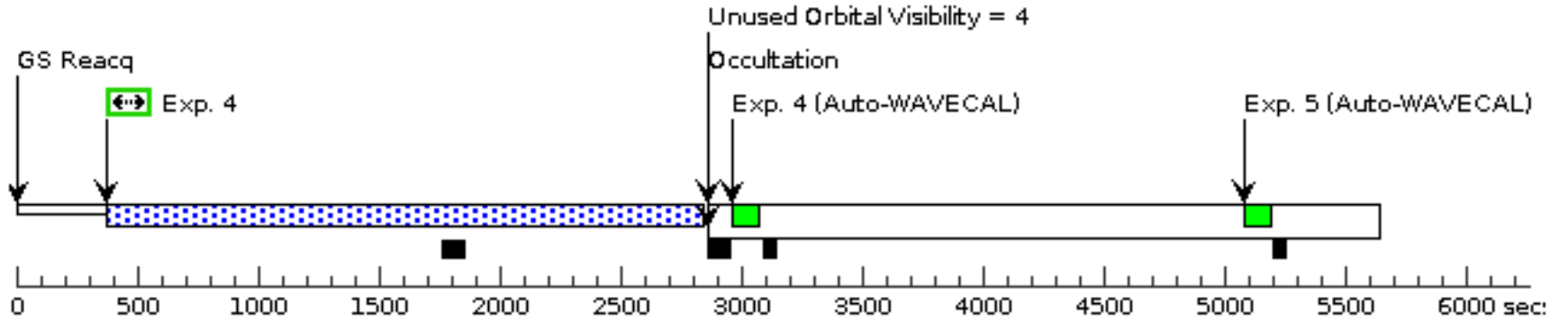
Fri Mar 06 19:00:21 GMT 2026

Visit	<b>Proposal 18235, G130M-Flare4 (06)</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: COS/FUV, COS/NUV Special Requirements: SCHED 100%; AFTER 03 BY 60 D TO 365 D Comments: Flare Monitoring									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
		(1)	LHS-1140 Alt Name1: G-268-38	RA: 00 44 59.6827 (11.2486779d) Dec: -15 16 27.09 (-15.27419d) Equinox: J2000	Proper Motion RA: 318.152 mas/yr Proper Motion Dec: -596.623 mas/yr Parallax: 0.066828" Epoch of Position: 2016.0	V=14.15 G =12.653	Reference Frame: ICRS			
	Comments: Gaia DR3 coordinates double checked 12/18/2025 Fluxes double checked 02/12/2026 Category=STAR Description=[EXTRA-SOLAR PLANETARY SYSTEM, M 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	NUV ACQ/ MIRRORB (COS.ta.202 1012)	(1) LHS-1140	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				957 Secs (957 Secs) [==>]	[1]
	Comments: 2% limitation on emission line lifetimes.									
	2	G130M/122 2-FP1 (COS.sp.202 1319)	(1) LHS-1140	COS/FUV, TIME-TAG, PSA	G130M 1222 A	FP-POS=1; BUFFER-TIME=13 50			56 Secs (56 Secs) [==>]	[1]
	3	G130M/122 2-FP1 (COS.sp.202 1319)	(1) LHS-1140	COS/FUV, TIME-TAG, PSA	G130M 1222 A	FP-POS=1; BUFFER-TIME=13 50			2422 Secs (2422 Secs) [==>]	[2]
	4	G130M/122 2-FP3 (COS.sp.202 1319)	(1) LHS-1140	COS/FUV, TIME-TAG, PSA	G130M 1222 A	FP-POS=3; BUFFER-TIME=13 50			2422 Secs (2422 Secs) [==>]	[3]
5	G130M/122 2-FP4 (COS.sp.202 1319)	(1) LHS-1140	COS/FUV, TIME-TAG, PSA	G130M 1222 A	FP-POS=4; BUFFER-TIME=13 50			2422 Secs (2422 Secs) [==>]	[4]	



**Orbit 3**

Server Version: 20250929



**Orbit 4**

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