



18364 - Testing the Collision-Color-Satellite Connection in the Trojans

Cycle: 34, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

<i>Name</i>	<i>Institution</i>
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Dr. Ian Wong (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) ENNOMOS	WFC3/UVIS	1	14-Aug-2026 08:00:14.0	yes
02	(1) ENNOMOS	WFC3/UVIS	1	14-Aug-2026 08:00:15.0	yes
11	(2) THRONIUM	WFC3/UVIS	1	14-Aug-2026 08:00:15.0	yes
12	(2) THRONIUM	WFC3/UVIS	1	14-Aug-2026 08:00:15.0	yes

4 Total Orbits Used

ABSTRACT

Large asteroids with small satellites are frequently associated with collisional families. Among the Trojans the Eurybates family is the largest of only six known families. (3548) Eurybates, the largest member of this family, is the first Trojan target of the Lucy Discovery mission. Eurybates also has a satellite and, intriguingly, is a spectrally neutral C-type in a population where more than 90% are redder P- or D-type objects. C-type collisional family asteroids with satellites are known in the Main Belt where C-types are common. But with just a single example of the apparent connection between collisions, satellite formation and unusual color in the Trojans, it is difficult to reach a conclusion about the causal nature of these correlated properties. However, there are two ideal candidates for testing this correlation - the C-type Trojan asteroids (4709) Ennomos and (9799) Thronium - both have recently been shown to have collisional families and both are less-red than the vast majority of Trojans. By using HST to search for

satellites, we propose to test the hypothesis that all three properties are causally related. If satellites are found, the likelihood of chance correlation is significantly reduced. Identifying the processes at work as "normal" will enhance the value of the upcoming Lucy encounter with Eurybates by allowing discoveries in that system to be extrapolated to other objects and populations. If no satellites are identified, we will tighten constraints on the outcomes and subsequent evolution of collisional processing in the Trojans.

OBSERVING DESCRIPTION

This proposal will execute two visits each to two Trojan asteroid that are possible analogs to Eurybates. Both are largest members of collisional families and both are unusually neutral in color, like Eurybates.

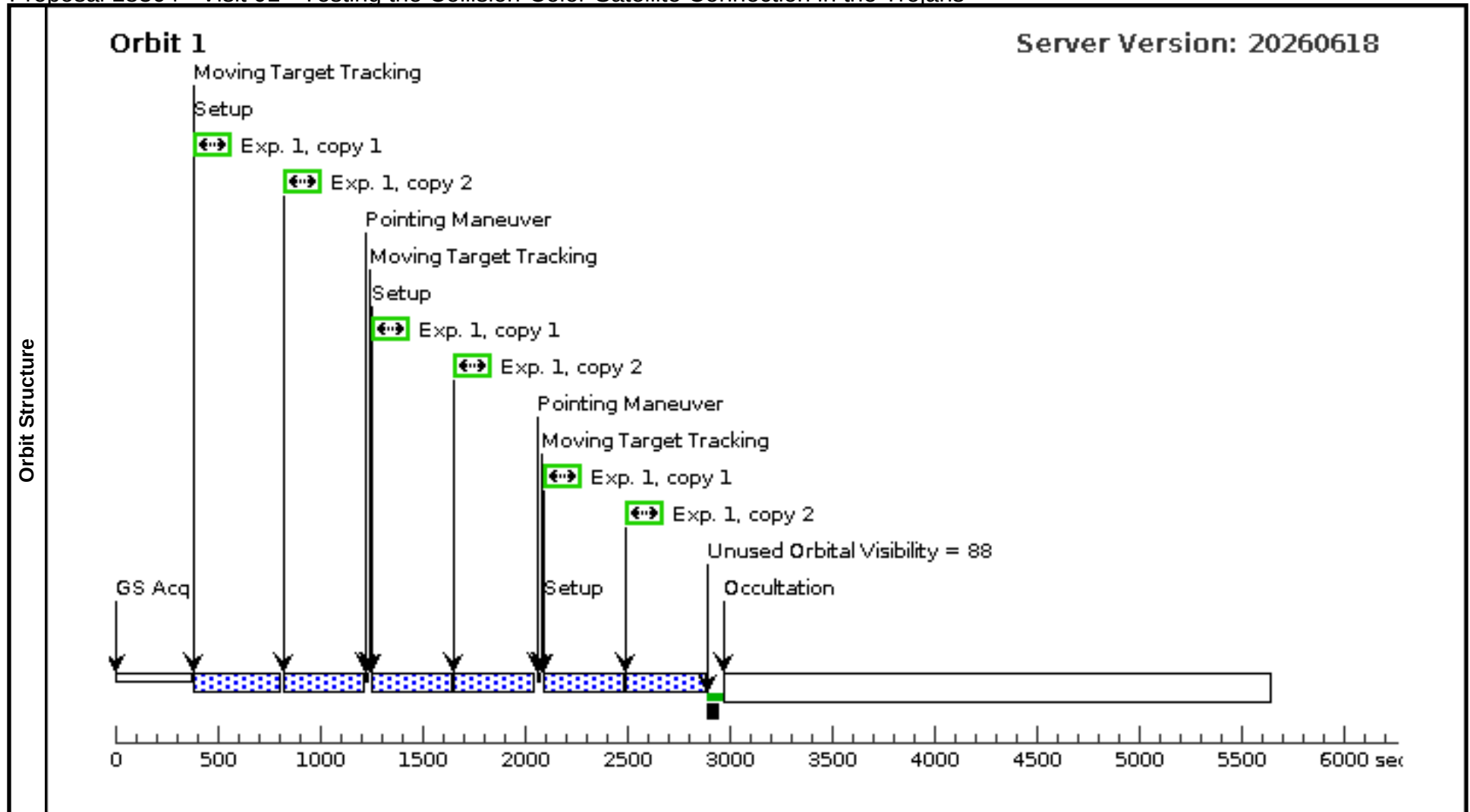
Each visit will have six exposures in the F350LP filter to go as deep as possible in order to search for satellites that might have resulted from the family forming collision.

The two visits for each object will be separated by a minimum time calculated to give even very wide possible satellites enough time to have moved at least 1/4 of an orbit to improve the chance of detection at at least one epoch.

A line dither pattern will be used with an offset between each iteration of the dither to achieve sub pixel dithering.

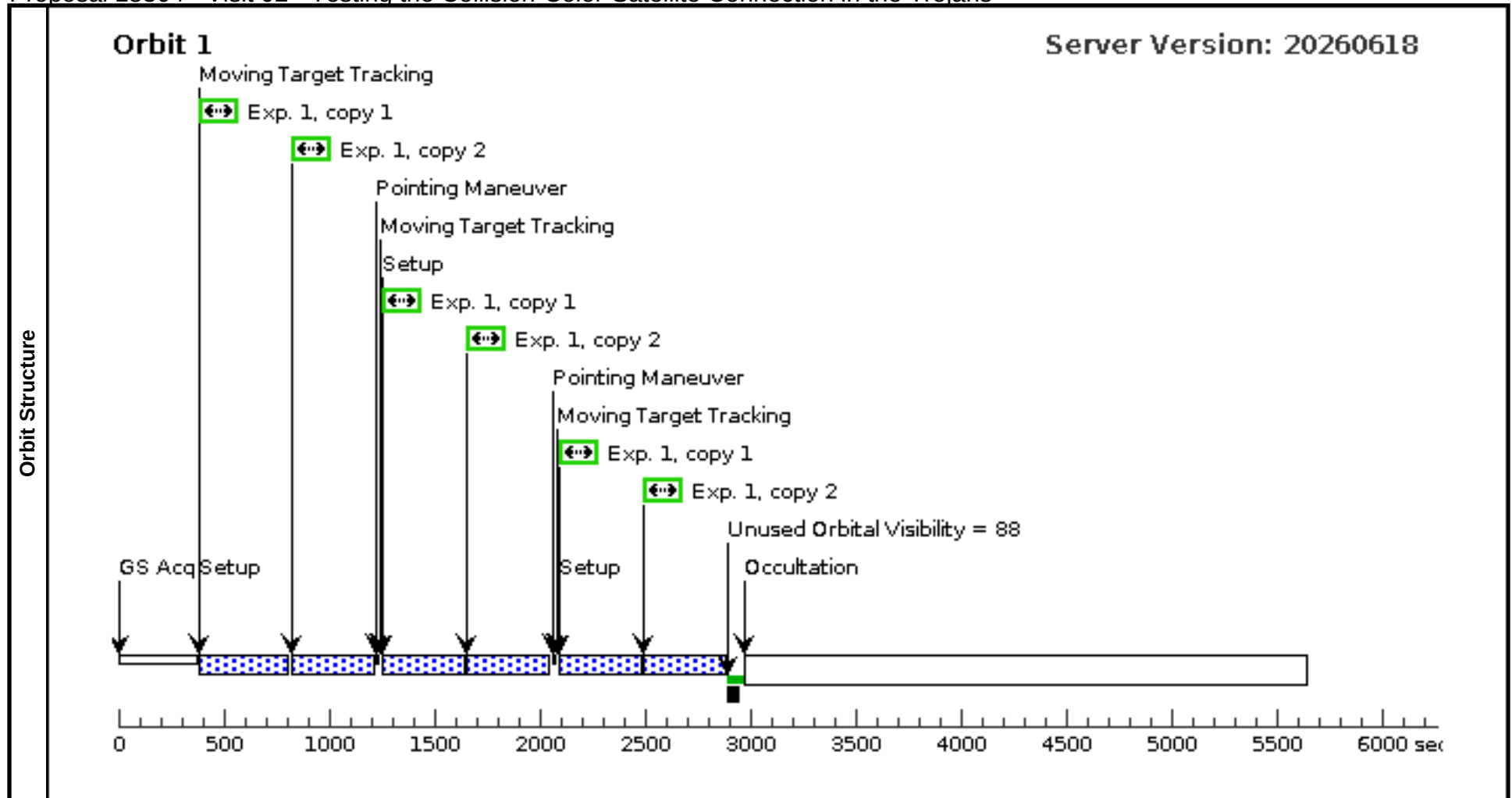
Proposal 18364 - Visit 01 - Testing the Collision-Color-Satellite Connection in the Trojans

Visit	Proposal 18364, Visit 01										Fri Aug 14 12:00:16 GMT 2026
	Diagnostic Status: Informational										
	Scientific Instruments: WFC3/UVIS										
	Special Requirements: BETWEEN 30-SEP-2026:00:00:00 AND 26-FEB-2027:00:00:00										
Diagnostics	(Visit 01) Informational (Form): The Visit Planner and Spike may produce different schedulability results.										
Patterns	#	Primary Pattern				Secondary Pattern				Exposures	
	(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false								(1)	
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center				
	(1)	ENNOMOS	TYPE=ASTEROID,A=5.27458652885 2086,E=0.02264257597954345,I=25.4 1386995274401,O=253.058845005412 2,W=83.67865706597865,M=92.7266 3675193036,EQUINOX=J2000,EPOC H=09-JUN- 2026:00:00:00,EpochTimeScale=TDB Comments: Description=Trojan Asteroid (4709) Ennomos				EARTH				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
	1		(1) ENNOMOS	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP			Sequence 1-1 Non-Int in Visit 01 Pattern 1, Exps 1-1 in Sequence 1-1 Non-Int in Visit 01 (1)	350 Secs X 2 (2100 Secs) [==>(Pattern 1, Copy 1)] [==>(Pattern 1, Copy 2)] [==>(Pattern 2, Copy 1)] [==>(Pattern 2, Copy 2)] [==>(Pattern 3, Copy 1)] [==>(Pattern 3, Copy 2)]	[1]	



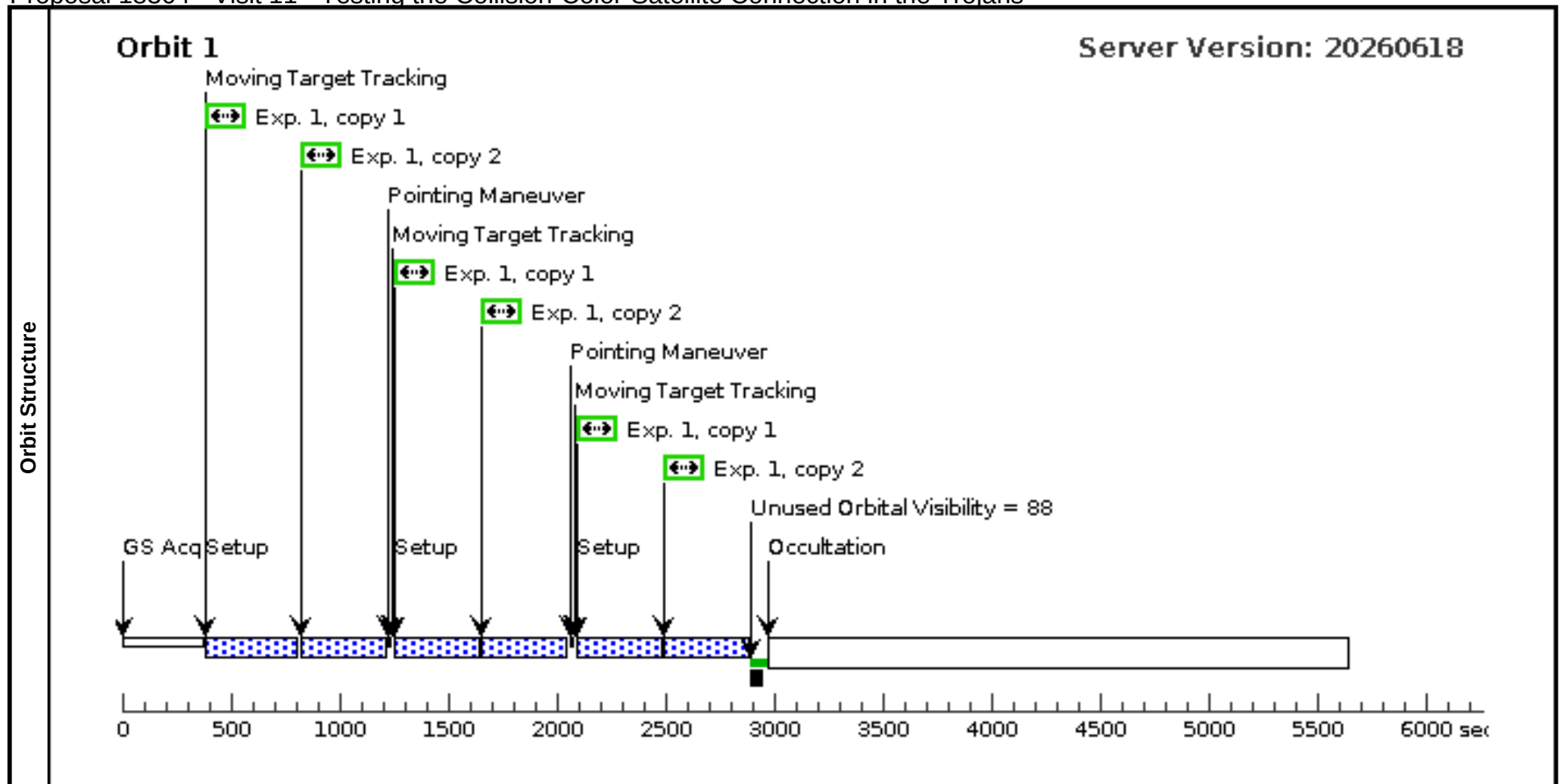
Proposal 18364 - Visit 02 - Testing the Collision-Color-Satellite Connection in the Trojans

Visit	Proposal 18364, Visit 02										Fri Aug 14 12:00:16 GMT 2026
	Diagnostic Status: Informational										
	Scientific Instruments: WFC3/UVIS										
	Special Requirements: AFTER 01 BY 12 D TO 120 D										
Diagnostics	(Visit 02) Informational (Form): The Visit Planner and Spike may produce different schedulability results.										
Patterns	#	Primary Pattern				Secondary Pattern				Exposures	
	(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=				Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false				(1)	
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center				
	(1)	ENNOMOS	TYPE=ASTEROID,A=5.27458652885 2086,E=0.02264257597954345,I=25.4 1386995274401,O=253.058845005412 2,W=83.67865706597865,M=92.7266 3675193036,EQUINOX=J2000,EPOC H=09-JUN- 2026:00:00:00,EpochTimeScale=TDB Comments: Description=Trojan Asteroid (4709) Ennomos	EARTH							
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
	1		(1) ENNOMOS	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP			Sequence 1-1 Non-Int in Visit 02 Pattern 1, Exps 1-1 in Sequence 1-1 Non-Int in Visit 02 (1)	350 Secs X 2 (2100 Secs) [==>(Pattern 1, Copy 1)] [==>(Pattern 1, Copy 2)] [==>(Pattern 2, Copy 1)] [==>(Pattern 2, Copy 2)] [==>(Pattern 3, Copy 1)] [==>(Pattern 3, Copy 2)]	[1]	



Proposal 18364 - Visit 11 - Testing the Collision-Color-Satellite Connection in the Trojans

Visit	Proposal 18364, Visit 11										Fri Aug 14 12:00:16 GMT 2026	
	Diagnostic Status: Informational											
	Scientific Instruments: WFC3/UVIS											
	Special Requirements: BETWEEN 11-JAN-2027:00:00:00 AND 02-JUL-2027:00:00:00											
Diagnostics	(Visit 11) Informational (Form): The Visit Planner and Spike may produce different schedulability results.											
Patterns	#	Primary Pattern				Secondary Pattern				Exposures		
	(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false								(1)		
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center					
	(2)	THRONIUM	TYPE=ASTEROID,A=5.19111055816 8659,E=0.04685583179040113,I=30.5 1270344780228,O=259.559313749743 2,W=115.3240300704947,M=159.674 2252254411,EQUINOX=J2000,EPOC H=09-JUN- 2026:00:00:00,EpochTimeScale=TDB Comments: Description=Trojan Asteroid (9799) Thronium				EARTH					
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit	
	1		(2) THRONIUM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP			Sequence 1-1 Non-Int in Visit 11 Pattern 1, Exps 1-1 in Sequence 1-1 Non-Int in Visit 11 (1)	350 Secs X 2 (2100 Secs) [==>(Pattern 1, Copy 1)] [==>(Pattern 1, Copy 2)] [==>(Pattern 2, Copy 1)] [==>(Pattern 2, Copy 2)] [==>(Pattern 3, Copy 1)] [==>(Pattern 3, Copy 2)]	[1]		



Proposal 18364 - Visit 12 - Testing the Collision-Color-Satellite Connection in the Trojans

Visit	Proposal 18364, Visit 12										Fri Aug 14 12:00:16 GMT 2026
	Diagnostic Status: Informational										
	Scientific Instruments: WFC3/UVIS										
	Special Requirements: AFTER 11 BY 20 D TO 120 D										
Diagnostics	(Visit 12) Informational (Form): The Visit Planner and Spike may produce different schedulability results.										
Patterns	#	Primary Pattern				Secondary Pattern				Exposures	
	(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false								(1)	
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center				
	(2)	THRONIUM	TYPE=ASTEROID,A=5.19111055816 8659,E=0.04685583179040113,I=30.5 1270344780228,O=259.559313749743 2,W=115.3240300704947,M=159.674 2252254411,EQUINOX=J2000,EPOC H=09-JUN- 2026:00:00:00,EpochTimeScale=TDB	EARTH							
	Comments: Description=Trojan Asteroid (9799) Thronium										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
	1		(2) THRONIUM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP			Sequence 1-1 Non-Int in Visit 12 Pattern 1, Exps 1-1 in Sequence 1-1 Non-Int in Visit 12 (1)	350 Secs X 2 (2100 Secs) [==>(Pattern 1, Copy 1)] [==>(Pattern 1, Copy 2)] [==>(Pattern 2, Copy 1)] [==>(Pattern 2, Copy 2)] [==>(Pattern 3, Copy 1)] [==>(Pattern 3, Copy 2)]	[1]	

