



15447 - Which way home? Finding the origin of our Solar System's first interstellar visitor (Part II)cd

Cycle: 25, Proposal Category: GO/DD

(Availability Mode: SUPPORTED)

INVESTIGATORS

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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>
06	(1) OUMUAMUA	WFC3/UVIS	1	18-Dec-2017 16:03:58.0	yes
07	(1) OUMUAMUA	WFC3/UVIS	1	18-Dec-2017 16:03:59.0	yes
08	(1) OUMUAMUA	WFC3/UVIS	1	18-Dec-2017 16:04:00.0	yes
09	(1) OUMUAMUA	WFC3/UVIS	1	18-Dec-2017 16:04:01.0	yes

4 Total Orbits Used

ABSTRACT

We request four additional HST/WFC3/UVIS orbits of 1I/217 U1 ('Oumuamua), our Solar System's first interstellar visitor, in order to complete our DD program 15405. Our science goal is to obtain precise astrometry along an extended arc length in order to identify the region from which this object originated. Since the rotational light curve of 'Oumuamua shows variations of as much as 2.5 mag in brightness, a secure detection in the HST single exposures needed to maximize astrometric precision can only be assured in observations conducted at light curve maximum. However, we and other teams have recently determined that 'Oumuamua is in a state of excited rotation and that, contrary to our initial expectations, we cannot predict the rotational phase in early January from existing data. We thus request four additional HST orbits that will allow us to sample 'Oumuamua's light curve at multiple rotation phases, thereby ensuring that program 15405 will obtain a secure, final detection of our target that is crucial for this program to achieve its scientific objective.

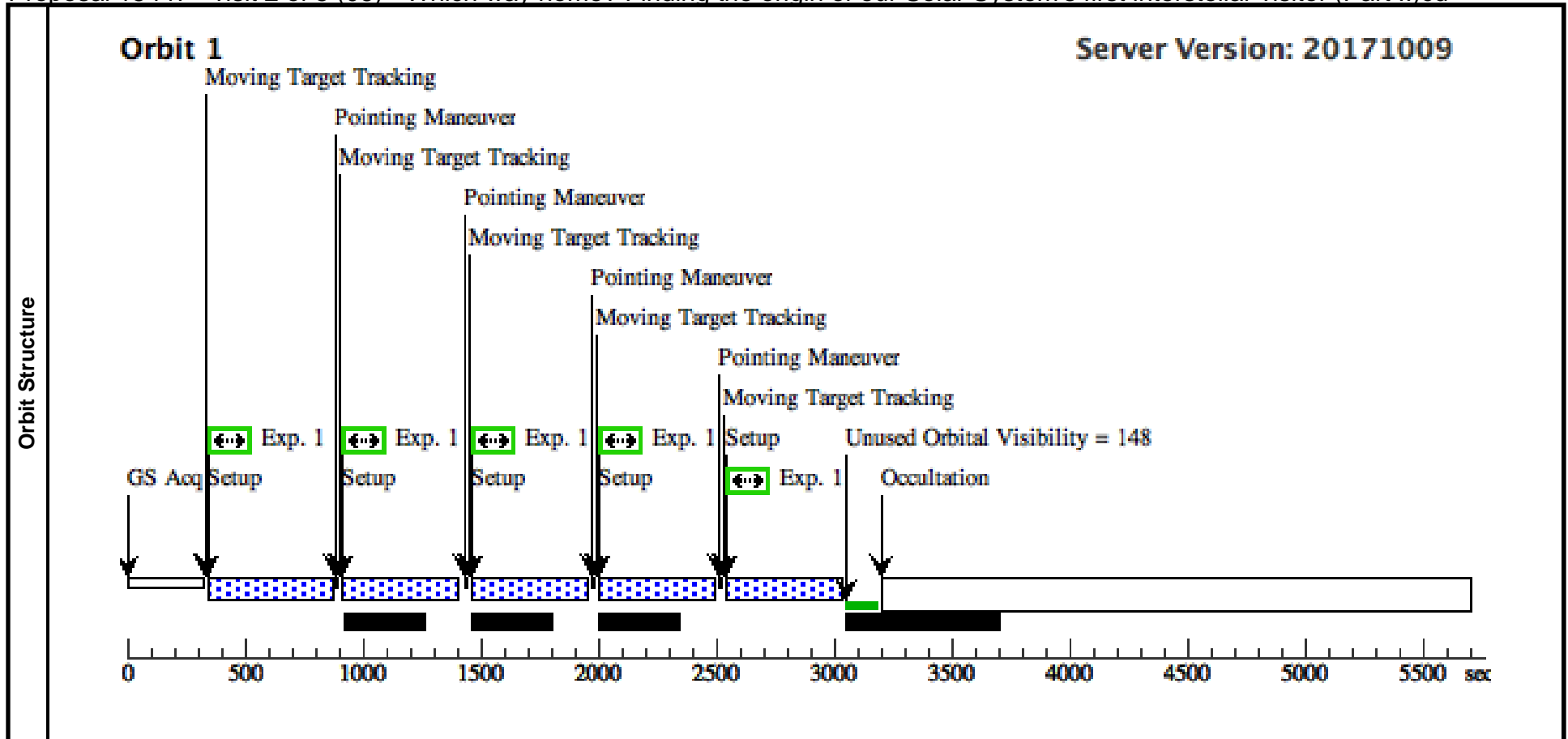
OBSERVING DESCRIPTION

Four different visits to 1I/Oumuamua. All visits are identical: 5 long exposures of the target, with each image taken at a different dither location.

Proposal 15447 - visit 2 of 5 (06) - Which way home? Finding the origin of our Solar System's first interstellar visitor (Part II)cd

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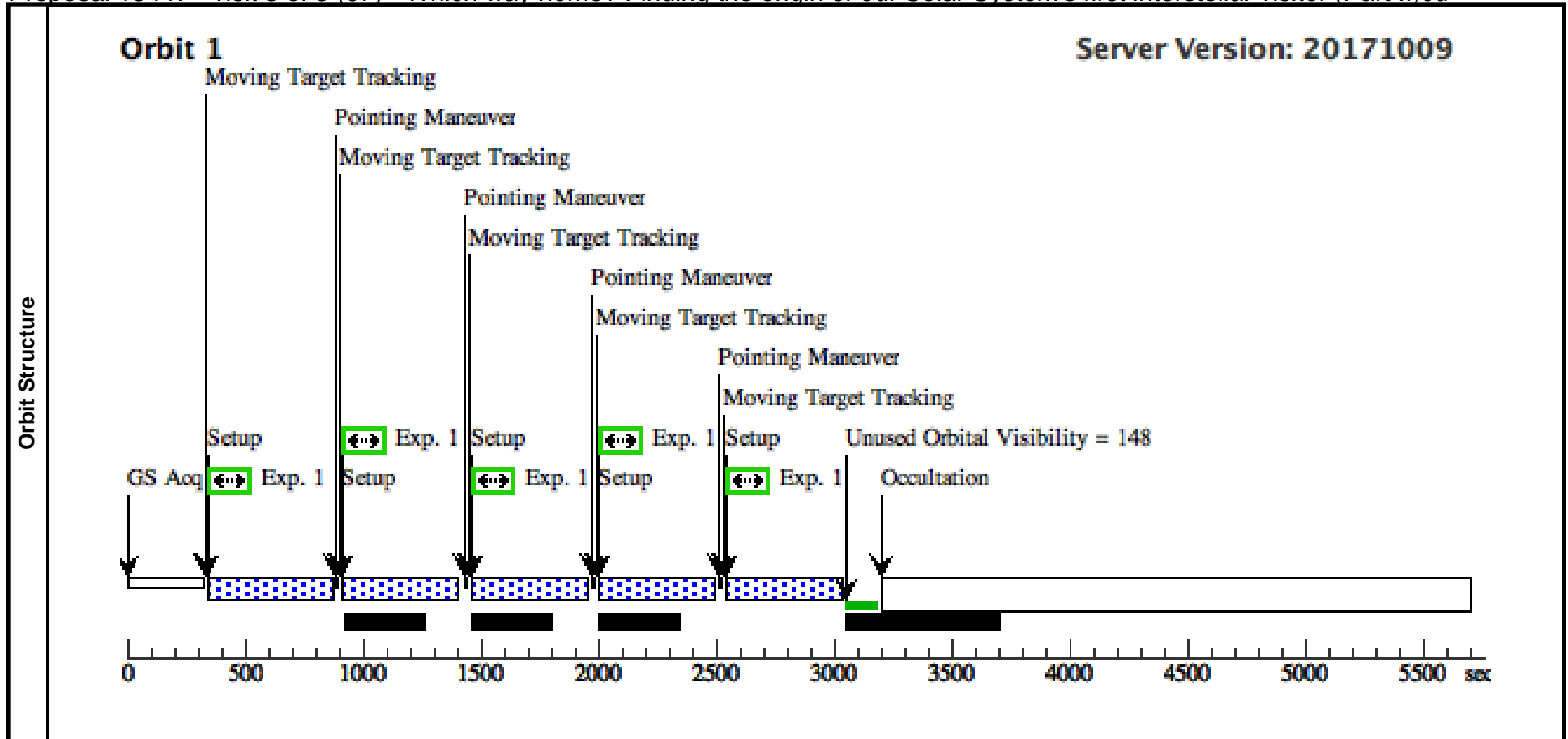
Visit	Proposal 15447, visit 2 of 5 (06), implementation Diagnostic Status: Warning Scientific Instruments: WFC3/UVIS Special Requirements: BETWEEN 01-JAN-2018:00:00:00 AND 03-JAN-2018:00:00:00 <i>Comments: This is the first of 5 visits spaced to catch the maximum of the target's light curve. The first visit of the set (05) is in program 15405. This visit is the first of this set.</i>									
	(Exposure 1 (Pattern 1, Exps 1-1 in Sequence 1-1 Non-Int in visit 2 of 5 (06)) special requirements) Warning (Form): Be very careful mixing POS TARG and Center_Pattern = Yes									
Diagnosics										
Patterns	#	Primary Pattern			Secondary Pattern		Exposures			
	(1)	Pattern Type=LINE Purpose=OTHER Number Of Points=5 Point Spacing=0.03 Line Spacing=	Coordinate Frame=CELESTIAL Pattern Orientation=0 Angle Between Sides= Center Pattern=true			(1)				
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center			
	(1)	OUMUAMUA	TYPE=COMET,Q=0.2558123336343 649,E=1.200914723821507,I=122.732 5277932375,O=24.59699783461255, W=241.7946554840634,T=09-SEP- 2017:12:12:09,TimeScale=TDB,EQ UINOX=J2000,EPOCH=01-JAN- 2018:00:00:00,EpochTimeScale=TDB				EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(1) OUMUAMUA	WFC3/UVIS, ACCUM, UVIS2	F350LP	POS TARG 0,-18.0	Sequence 1-1 Non-Int in visit 2 of 5 (06) Pattern 1, Exps 1-1 in Sequence 1-1 Non-Int in visit 2 of 5 (06) (1)	380 Secs (1900 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)] [=>(Pattern 5)]	[1]		



Proposal 15447 - visit 3 of 5 (07) - Which way home? Finding the origin of our Solar System's first interstellar visitor (Part II)cd

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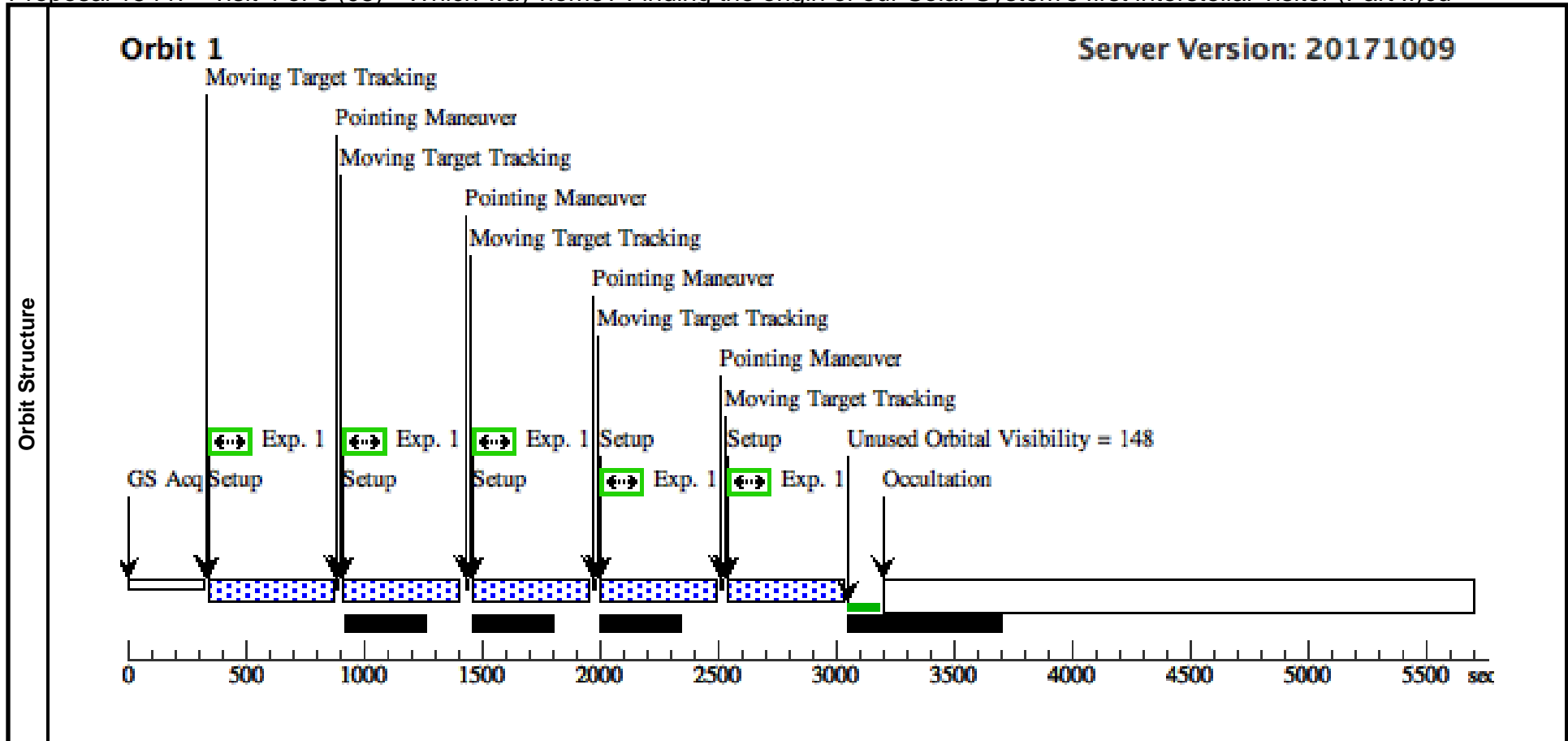
Visit	Proposal 15447, visit 3 of 5 (07), implementation Diagnostic Status: Warning Scientific Instruments: WFC3/UVIS Special Requirements: AFTER 06 BY 0 H TO 2 H <i>Comments: This is the third of 5 visits spaced to catch the maximum of the target's light curve. The first visit of the set (05) is in program 15405. This is the second visit in this program.</i>									
	(Exposure 1 (Pattern 1, Exps 1-1 in Sequence 1-1 Non-Int in visit 3 of 5 (07)) special requirements) Warning (Form): Be very careful mixing POS TARG and Center_Pattern = Yes									
Diagnosics										
Patterns	#	Primary Pattern			Secondary Pattern		Exposures			
	(1)	Pattern Type=LINE Purpose=OTHER Number Of Points=5 Point Spacing=0.03 Line Spacing=	Coordinate Frame=CELESTIAL Pattern Orientation=0 Angle Between Sides= Center Pattern=true			(1)				
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center			
	(1)	OUMUAMUA	TYPE=COMET,Q=0.2558123336343 649,E=1.200914723821507,I=122.732 5277932375,O=24.59699783461255, W=241.7946554840634,T=09-SEP- 2017:12:12:09,TimeScale=TDB,EQ UINOX=J2000,EPOCH=01-JAN- 2018:00:00:00,EpochTimeScale=TDB				EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(1) OUMUAMUA	WFC3/UVIS, ACCUM, UVIS2	F350LP	POS TARG -8.0,24.0	Sequence 1-1 Non-Int in visit 3 of 5 (07) Pattern 1, Exps 1-1 in Sequence 1-1 Non-Int in visit 3 of 5 (07) (1)	380 Secs (1900 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)] [=>(Pattern 5)]	[1]		



Proposal 15447 - visit 4 of 5 (08) - Which way home? Finding the origin of our Solar System's first interstellar visitor (Part II)cd

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Visit	Proposal 15447, visit 4 of 5 (08), implementation Diagnostic Status: Warning Scientific Instruments: WFC3/UVIS Special Requirements: AFTER 07 BY 0 H TO 2 H <i>Comments: This is the fourth of 5 visits spaced to catch the maximum of the target's light curve. The first visit of the set (05) is in program 15405. This is the third visit in this program.</i>									
	(Exposure 1 (Pattern 1, Exps 1-1 in Sequence 1-1 Non-Int in visit 4 of 5 (08)) special requirements) Warning (Form): Be very careful mixing POS TARG and Center_Pattern = Yes									
Diagnosics										
Patterns	#	Primary Pattern		Secondary Pattern		Exposures				
	(1)	Pattern Type=LINE Purpose=OTHER Number Of Points=5 Point Spacing=0.03 Line Spacing=	Coordinate Frame=CELESTIAL Pattern Orientation=0 Angle Between Sides= Center Pattern=true			(1)				
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center			
	(1)	OUMUAMUA	TYPE=COMET,Q=0.2558123336343 649,E=1.200914723821507,I=122.732 5277932375,O=24.59699783461255, W=241.7946554840634,T=09-SEP- 2017:12:12:09,TimeScale=TDB,EQ UINOX=J2000,EPOCH=01-JAN- 2018:00:00:00,EpochTimeScale=TDB				EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(1) OUMUAMUA	WFC3/UVIS, ACCUM, UVIS2	F350LP			POS TARG -36.0,-2.0	Sequence 1-1 Non-Int in visit 4 of 5 (08) Pattern 1, Exps 1-1 in Sequence 1-1 Non-Int in visit 4 of 5 (08) (1)	380 Secs (1900 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)] [=>(Pattern 5)]	[1]



Proposal 15447 - visit 5 of 5 (09) - Which way home? Finding the origin of our Solar System's first interstellar visitor (Part II)cd

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Visit	Proposal 15447, visit 5 of 5 (09), implementation Diagnostic Status: Warning Scientific Instruments: WFC3/UVIS Special Requirements: AFTER 08 BY 0 H TO 2 H <i>Comments: This is the last of 5 visits spaced to catch the maximum of the target's light curve. The first visit of the set (05) is in program 15405. This is the fourth visit in this program.</i>									
	(Exposure 1 (Pattern 1, Exps 1-1 in Sequence 1-1 Non-Int in visit 5 of 5 (09)) special requirements) Warning (Form): Be very careful mixing POS TARG and Center_Pattern = Yes									
Diagnosics										
Patterns	#	Primary Pattern			Secondary Pattern		Exposures			
	(1)	Pattern Type=LINE Purpose=OTHER Number Of Points=5 Point Spacing=0.03 Line Spacing=	Coordinate Frame=CELESTIAL Pattern Orientation=0 Angle Between Sides= Center Pattern=true			(1)				
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center			
	(1)	OUMUAMUA	TYPE=COMET,Q=0.2558123336343 649,E=1.200914723821507,I=122.732 5277932375,O=24.59699783461255, W=241.7946554840634,T=09-SEP- 2017:12:12:09,TimeScale=TDB,EQ UINOX=J2000,EPOCH=01-JAN- 2018:00:00:00,EpochTimeScale=TDB				EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(1) OUMUAMUA	WFC3/UVIS, ACCUM, UVIS2	F350LP	POS TARG -8.0,24.0	Sequence 1-1 Non-Int in visit 5 of 5 (09) Pattern 1, Exps 1-1 in Sequence 1-1 Non-Int in visit 5 of 5 (09) (1)	380 Secs (1900 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)] [=>(Pattern 5)]	[1]		

