



15233 - Density of transneptunian object 229762 2007 UK126

Cycle: 25, Proposal Category: GO

(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>
01	(1) 229762	WFC3/UVIS	1	04-Jun-2018 16:02:03.0	yes
02	(1) 229762	WFC3/UVIS	1	04-Jun-2018 16:02:05.0	yes
03	(1) 229762	WFC3/UVIS	1	04-Jun-2018 16:02:07.0	yes
04	(1) 229762	WFC3/UVIS	1	04-Jun-2018 16:02:08.0	yes
05	(1) 229762	WFC3/UVIS	1	04-Jun-2018 16:02:10.0	yes

5 Total Orbits Used

ABSTRACT

Densities provide unique information about bulk composition and interior structure and are key to going beyond the skin-deep view offered by remote-sensing techniques based on photometry, spectroscopy, and polarimetry. They are known for a handful of the relict planetesimals that populate our Solar System's Kuiper belt, revealing intriguing differences between small and large bodies. More and better quality data are needed to address fundamental questions about how planetesimals form from nebular solids, and how distinct materials are distributed through the nebula.

Proposal 15233 (STScI Edit Number: 1, Created: Monday, June 4, 2018 3:02:11 PM EST) - Overview

Masses from binary orbits are generally quite precise, but a problem afflicting many of the known densities is that they depend on size estimates from thermal emission observations, with large model-dependent uncertainties that dominate the error bars on density estimates. Stellar occultations can provide much more accurate sizes and thus densities, but they depend on fortuitous geometry and thus can only be done for a few particularly valuable binaries. We propose observations of a system where an accurate density can be determined: 229762 2007 UK126. An accurate size is already available from multiple stellar occultation chords. This proposal will determine the mass, and thus the density.

OBSERVING DESCRIPTION

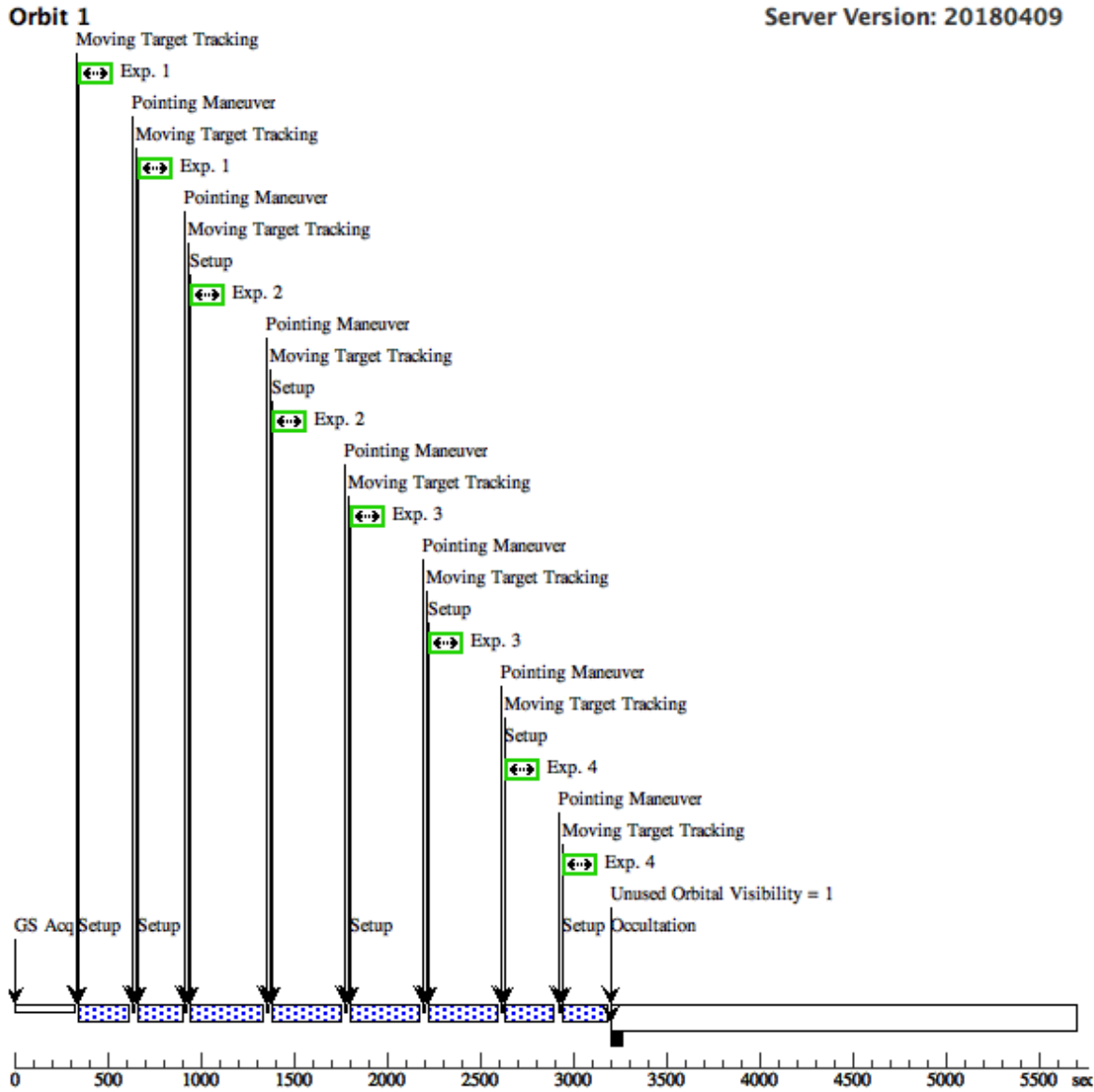
Observations for mutual orbit determination of a transneptunian binary. Our goal is to determine the mutual orbit and thus the mass. Since we don't know the orbit orientation or period, it is efficient to use a step-wise strategy. We will do an initial pair of observation visits, to be scheduled as early as convenient. After those are done, we will use the information obtained in those two visits to optimize scheduling of the subsequent visit, and so on. The last 3 visits are accordingly marked as "on hold". This is the same approach as we have used in several previous programs, and we believe we can do it in such a way as to not impose difficulties on the schedulers, via close coordination with STScI staff.

Proposal 15233 - Visit 01 - Density of transneptunian object 229762 2007 UK126

Mon Jun 04 20:02:11 GMT 2018

Visit	Proposal 15233, Visit 01, completed Diagnostic Status: Warning Scientific Instruments: WFC3/UVIS Special Requirements: SCHED 30%: BETWEEN 15-DEC-2017:00:00:00 AND 10-JAN-2018:00:00:00									
	(Exposure 1 (Pattern 1, Exps 1-1 in Visit 01)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser (Exposure 2 (Pattern 1, Exps 2-2 in Visit 01)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser (Exposure 3 (Pattern 1, Exps 3-3 in Visit 01)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser (Exposure 4 (Pattern 1, Exps 4-4 in Visit 01)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser									
Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
	(1)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false				(1), (2), (3), (4)			
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center			
	(1)	229762	TYPE=ASTEROID,A=72.804064901, E=0.485230329260,I=23.36819182700, O=131.139657960000,W=346.93650 4680000,M=343.739036250000,EQUI NOX=J2000,EPOCH=01-JUL- 2018:00:00:00,EpochTimeScale=UTC				ANGULAR_RATE 229762 FROM EARTH GT 0.0001	EARTH		
Comments: Description=transneptunian binary system										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(1) 229762	(1) 229762	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	FLASH=8.0; CR-SPLIT=NO	POS TARG -.1582,0 .0289867	Pattern 1, Exps 1-1 i n Visit 01 (1)	192 Secs (384 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	2	(1) 229762	(1) 229762	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W	FLASH=10.0; CR-SPLIT=NO	POS TARG -0.1532 56,-0.144537	Pattern 1, Exps 2-2 i n Visit 01 (1)	326 Secs (652 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	3	(1) 229762	(1) 229762	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W	FLASH=10.0; CR-SPLIT=NO	POS TARG 0.05418 35,0.0385166	Pattern 1, Exps 3-3 i n Visit 01 (1)	326 Secs (652 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	4	(1) 229762	(1) 229762	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	FLASH=8.0; CR-SPLIT=NO	POS TARG 0.04943 75,-0.145331	Pattern 1, Exps 4-4 i n Visit 01 (1)	192 Secs (384 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]

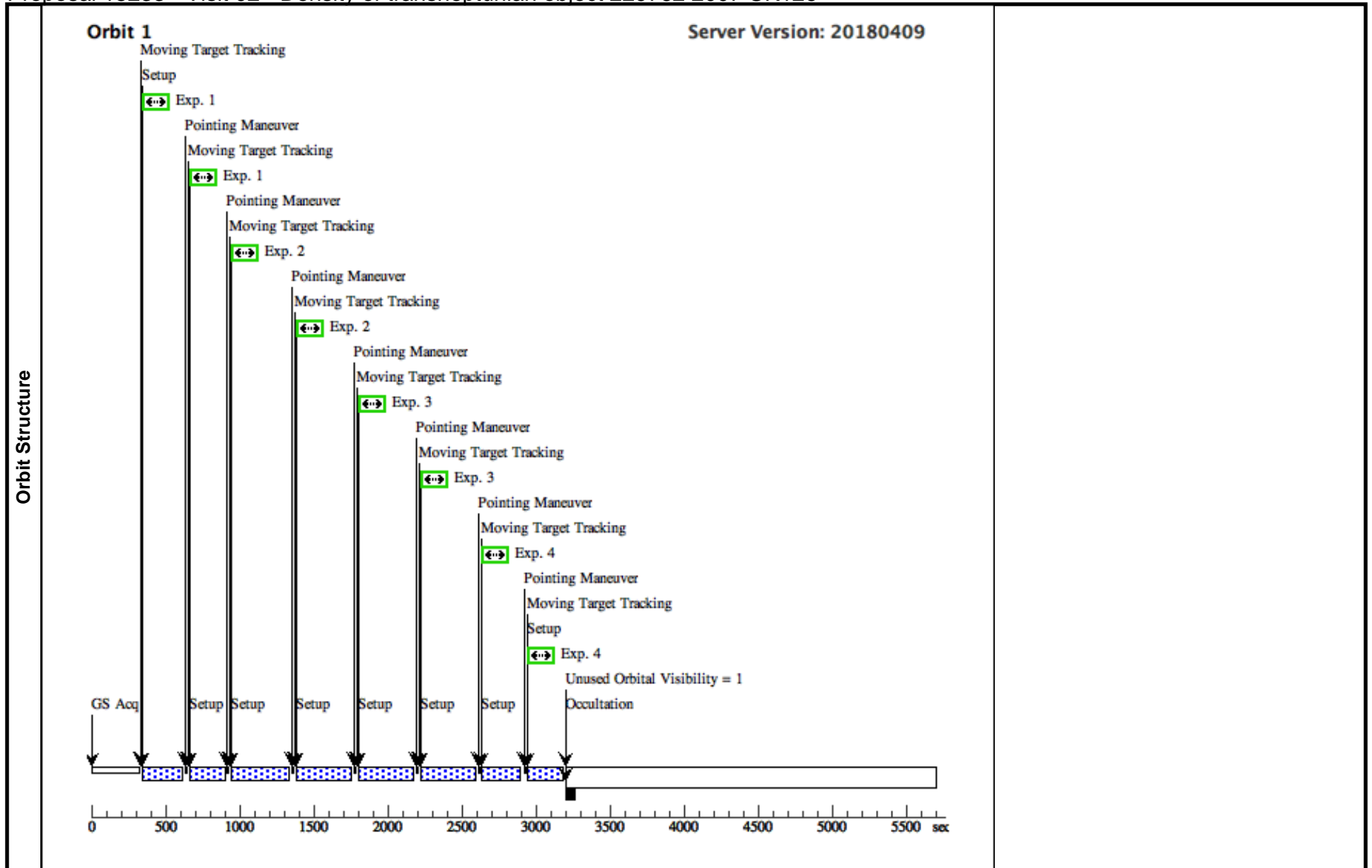
Orbit Structure



Proposal 15233 - Visit 02 - Density of transneptunian object 229762 2007 UK126

Mon Jun 04 20:02:11 GMT 2018

Visit	Proposal 15233, Visit 02, completed Diagnostic Status: Warning Scientific Instruments: WFC3/UVIS Special Requirements: SCHED 30%; AFTER 01 BY 10 H TO 20 H									
	(Exposure 1 (Pattern 1, Exps 1-1 in Visit 02)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser (Exposure 2 (Pattern 1, Exps 2-2 in Visit 02)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser (Exposure 3 (Pattern 1, Exps 3-3 in Visit 02)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser (Exposure 4 (Pattern 1, Exps 4-4 in Visit 02)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser									
Diagnosics										
Patterns	#	Primary Pattern		Secondary Pattern		Exposures				
	(1)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false			(1), (2), (3), (4)				
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center			
	(1)	229762	TYPE=ASTEROID,A=72.804064901, E=0.485230329260,I=23.36819182700, O=131.139657960000,W=346.93650 4680000,M=343.739036250000,EQUI NOX=J2000,EPOCH=01-JUL- 2018:00:00:00,EpochTimeScale=UTC Comments: Description=transneptunian binary system			ANGULAR_RATE 229762 FROM EARTH EARTH GT 0.0001	EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(1) 229762	(1) 229762	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	FLASH=8.0; CR-SPLIT=NO	POS TARG -.1582,0 .0289867	Pattern 1, Exps 1-1 in Visit 02 (1)	192 Secs (384 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	2	(1) 229762	(1) 229762	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W	FLASH=10.0; CR-SPLIT=NO	POS TARG -0.1532 56,-0.144537	Pattern 1, Exps 2-2 in Visit 02 (1)	326 Secs (652 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	3	(1) 229762	(1) 229762	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W	FLASH=10.0; CR-SPLIT=NO	POS TARG 0.05418 35,0.0385166	Pattern 1, Exps 3-3 in Visit 02 (1)	326 Secs (652 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	4	(1) 229762	(1) 229762	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	FLASH=8.0; CR-SPLIT=NO	POS TARG 0.04943 75,-0.145331	Pattern 1, Exps 4-4 in Visit 02 (1)	192 Secs (384 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]

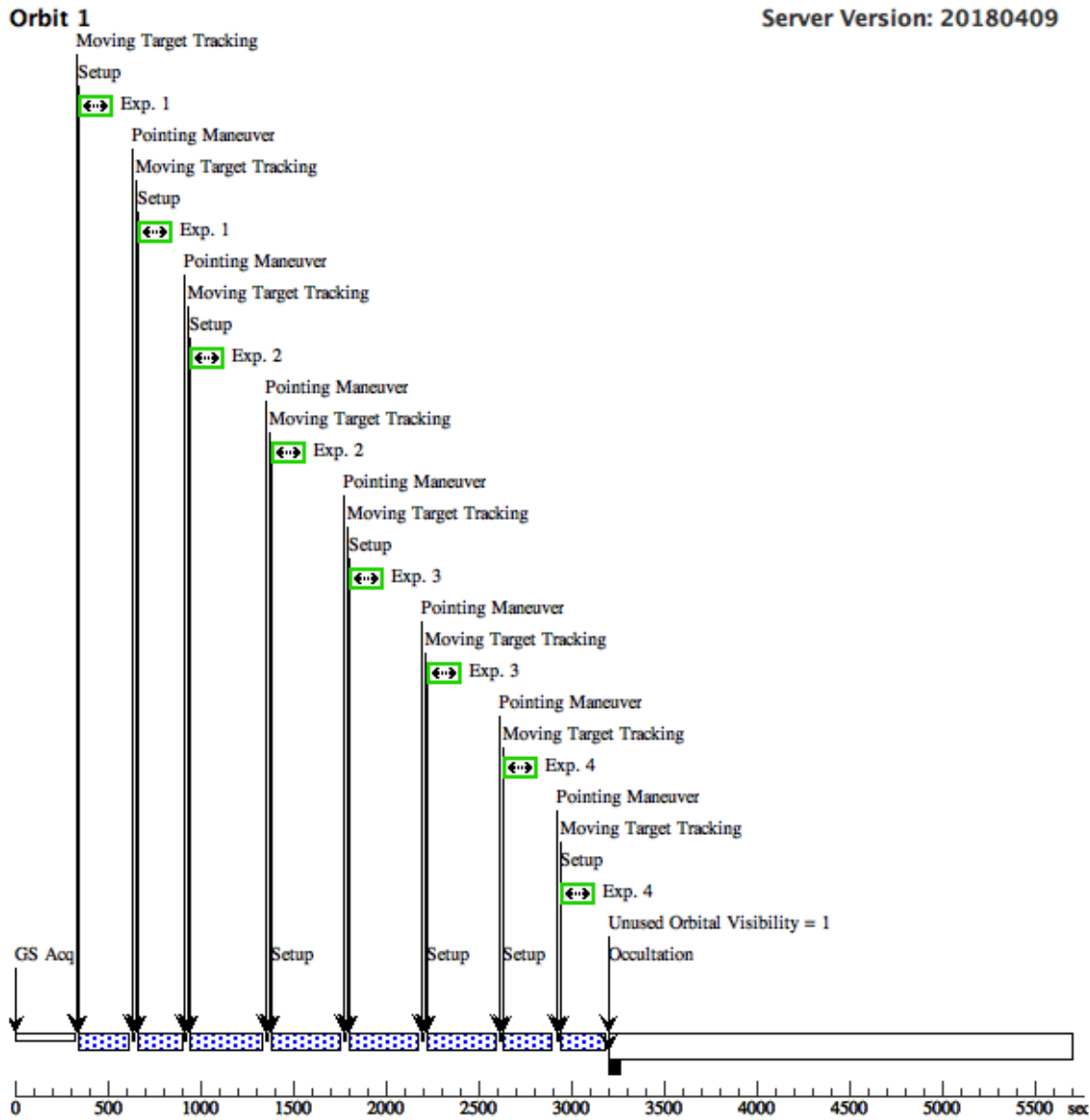


Proposal 15233 - Visit 03 - Density of transneptunian object 229762 2007 UK126

Mon Jun 04 20:02:11 GMT 2018

Visit	Proposal 15233, Visit 03, completed Diagnostic Status: Warning Scientific Instruments: WFC3/UVIS Special Requirements: SCHED 30%										
	(Exposure 1 (Pattern 1, Exps 1-1 in Visit 03)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser (Exposure 2 (Pattern 1, Exps 2-2 in Visit 03)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser (Exposure 3 (Pattern 1, Exps 3-3 in Visit 03)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser (Exposure 4 (Pattern 1, Exps 4-4 in Visit 03)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser										
Patterns	#	Primary Pattern				Secondary Pattern				Exposures	
	(1)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false					(1), (2), (3), (4)			
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center				
	(1)	229762	TYPE=ASTEROID,A=72.804064901, E=0.485230329260,I=23.36819182700, O=131.139657960000,W=346.93650 4680000,M=343.739036250000,EQUI NOX=J2000,EPOCH=01-JUL- 2018:00:00:00,EpochTimeScale=UTC				ANGULAR_RATE 229762 FROM EARTH GT 0.0001	EARTH			
<i>Comments: Description=transneptunian binary system</i>											
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	(1) 229762	(1) 229762	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	FLASH=8.0; CR-SPLIT=NO	POS TARG -.1582,0 .0289867	Pattern 1, Exps 1-1 i n Visit 03 (1)	192 Secs (384 Secs) [=>(Pattern 1)] [=>(Pattern 2)]		[1]
	2	(1) 229762	(1) 229762	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W	FLASH=10.0; CR-SPLIT=NO	POS TARG -0.1532 56,-0.144537	Pattern 1, Exps 2-2 i n Visit 03 (1)	326 Secs (652 Secs) [=>(Pattern 1)] [=>(Pattern 2)]		[1]
	3	(1) 229762	(1) 229762	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W	FLASH=10.0; CR-SPLIT=NO	POS TARG 0.05418 35,0.0385166	Pattern 1, Exps 3-3 i n Visit 03 (1)	326 Secs (652 Secs) [=>(Pattern 1)] [=>(Pattern 2)]		[1]
	4	(1) 229762	(1) 229762	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	FLASH=8.0; CR-SPLIT=NO	POS TARG 0.04943 75,-0.145331	Pattern 1, Exps 4-4 i n Visit 03 (1)	192 Secs (384 Secs) [=>(Pattern 1)] [=>(Pattern 2)]		[1]

Orbit Structure

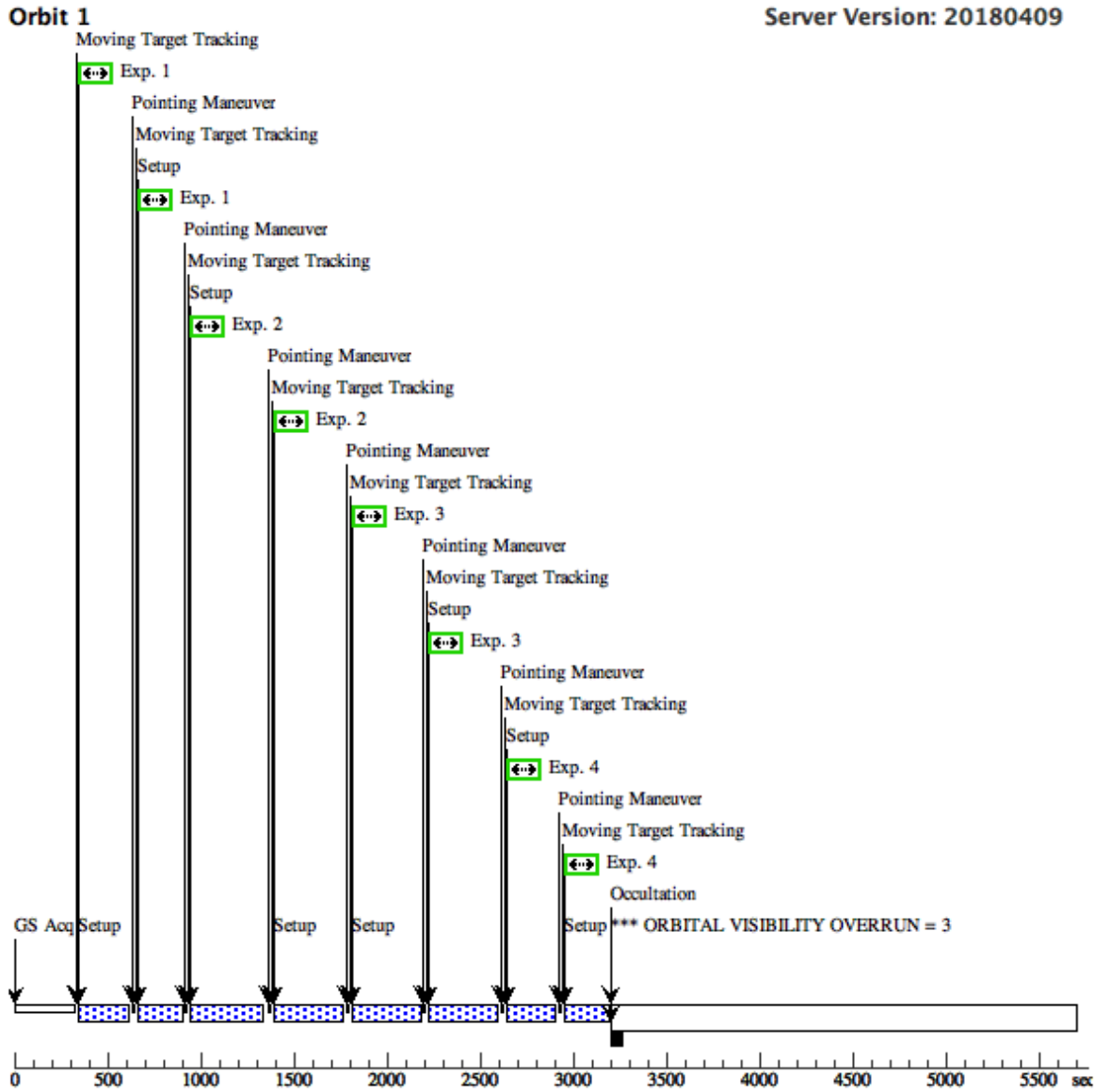


Proposal 15233 - Visit 04 - Density of transneptunian object 229762 2007 UK126

Mon Jun 04 20:02:11 GMT 2018

Visit	Proposal 15233, Visit 04, completed Diagnostic Status: Warning Scientific Instruments: WFC3/UVIS Special Requirements: SCHED 30%; AFTER 03 BY 3 D TO 4 D										
	Diagnosics (Visit 04) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN (Exposure 1 (Pattern 1, Exps 1-1 in Visit 04)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser (Exposure 4 (Pattern 1, Exps 4-4 in Visit 04)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser										
Patterns	#	Primary Pattern				Secondary Pattern				Exposures	
	(1)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=		Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false						(1), (2), (3), (4)	
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window			Ephem Center		
	(1)	229762	TYPE=ASTEROID,A=72.804064901, E=0.485230329260,I=23.36819182700 O=131.139657960000,W=346.93650 4680000,M=343.739036250000,EQUI NOX=J2000,EPOCH=01-JUL- 2018:00:00:00,EpochTimeScale=UTC				ANGULAR_RATE 229762 FROM EARTH GT 0.0001			EARTH	
<i>Comments: Description=transneptunian binary system</i>											
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1		(1) 229762	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	FLASH=8.0; CR-SPLIT=NO	POS TARG -.1582,0 .0289867	Pattern 1, Exps 1-1 i n Visit 04 (1)	192 Secs (384 Secs)		
									[=>(Pattern 1)] [=>(Pattern 2)]		[1]
	2		(1) 229762	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F438W	FLASH=12.0; CR-SPLIT=NO	POS TARG -0.1532 56,-0.144537	Pattern 1, Exps 2-2 i n Visit 04 (1)	326 Secs (652 Secs)		
									[=>(Pattern 1)] [=>(Pattern 2)]		[1]
3		(1) 229762	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F438W	FLASH=12.0; CR-SPLIT=NO	POS TARG 0.05418 35,0.0385166	Pattern 1, Exps 3-3 i n Visit 04 (1)	326 Secs (652 Secs)			
								[=>(Pattern 1)] [=>(Pattern 2)]		[1]	
4		(1) 229762	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	FLASH=8.0; CR-SPLIT=NO	POS TARG 0.04943 75,-0.145331	Pattern 1, Exps 4-4 i n Visit 04 (1)	192 Secs (384 Secs)			
								[=>(Pattern 1)] [=>(Pattern 2)]		[1]	

Orbit Structure



Proposal 15233 - Visit 05 - Density of transneptunian object 229762 2007 UK126

Mon Jun 04 20:02:11 GMT 2018

Visit	Proposal 15233, Visit 05, implementation Diagnostic Status: Warning Scientific Instruments: WFC3/UVIS Special Requirements: SCHED 30%: BETWEEN 02-AUG-2018:00:00:00 AND 07-AUG-2018:00:00:00									
	(Exposure 1 (Pattern 1, Exps 1-1 in Visit 05)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser (Exposure 2 (Pattern 1, Exps 2-2 in Visit 05)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser (Exposure 3 (Pattern 1, Exps 3-3 in Visit 05)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser (Exposure 4 (Pattern 1, Exps 4-4 in Visit 05)) Warning (Form): FLASH level may be too high for this exposure or a long subexposure. See extended explanation in the diagnostic browser									
Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
	(1)	Pattern Type=LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false				(1), (2), (3), (4)			
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center			
	(1)	229762	TYPE=ASTEROID,A=72.804064901, E=0.485230329260,I=23.36819182700, O=131.139657960000,W=346.93650 4680000,M=343.739036250000,EQUI NOX=J2000,EPOCH=01-JUL- 2018:00:00:00,EpochTimeScale=UTC				ANGULAR_RATE 229762 FROM EARTH GT 0.0001	EARTH		
Comments: Description=transneptunian binary system										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(1) 229762	(1) 229762	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	FLASH=8.0; CR-SPLIT=NO	POS TARG -.1582,0 .0289867	Pattern 1, Exps 1-1 i n Visit 05 (1)	192 Secs (384 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	2	(1) 229762	(1) 229762	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W	FLASH=10.0; CR-SPLIT=NO	POS TARG -0.1532 56,-0.144537	Pattern 1, Exps 2-2 i n Visit 05 (1)	326 Secs (652 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	3	(1) 229762	(1) 229762	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W	FLASH=10.0; CR-SPLIT=NO	POS TARG 0.05418 35,0.0385166	Pattern 1, Exps 3-3 i n Visit 05 (1)	326 Secs (652 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	4	(1) 229762	(1) 229762	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	FLASH=8.0; CR-SPLIT=NO	POS TARG 0.04943 75,-0.145331	Pattern 1, Exps 4-4 i n Visit 05 (1)	192 Secs (384 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]

