



## 12237 - Orbits, Masses, Densities, and Colors of Two Transneptunian Binaries

Cycle: 18, 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) 174567	WFC3/UVIS	1	09-Sep-2011 21:01:09.0	yes
02	(1) 174567	WFC3/UVIS	1	09-Sep-2011 21:01:17.0	yes
03	(1) 174567	WFC3/IR WFC3/UVIS	1	09-Sep-2011 21:01:25.0	yes
04	(1) 174567	WFC3/IR WFC3/UVIS	1	09-Sep-2011 21:01:32.0	yes
05	(2) 2005EF298	WFC3/UVIS	1	09-Sep-2011 21:01:38.0	yes
06	(2) 2005EF298	WFC3/UVIS	1	09-Sep-2011 21:01:44.0	yes
07	(2) 2005EF298	WFC3/UVIS	1	09-Sep-2011 21:01:50.0	yes
08	(2) 2005EF298	WFC3/IR WFC3/UVIS	1	09-Sep-2011 21:01:56.0	yes

<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>
09	(2) 2005EF298	WFC3/IR WFC3/UVIS	1	09-Sep-2011 21:02:03.0	yes
10	(2) 2005EF298	WFC3/UVIS	1	09-Sep-2011 21:02:09.0	yes

10 Total Orbits Used

## **ABSTRACT**

Binaries are the key to learning many crucial bulk properties of transneptunian objects (TNOs) including their masses. Perhaps the most interesting mass-dependent property of a TNO is its bulk density, which provides unique information about its bulk composition and interior structure. Densities have so far only been measured for a handful of binary TNO systems. This proposal seeks to determine orbits and thus masses of two more binary TNOs, both of which are also to be observed at thermal infrared wavelengths by the Herschel spacecraft. Combining the masses from Hubble with the sizes from Herschel will enable us to compute their densities. We will also obtain multi-wavelength photometric colors of the individual components of each binary system. It is imperative to link colors to the physical properties measurable in binary systems in order to use the remnant planetesimals in today's Kuiper belt to learn more about the early history of our own solar system, and more generally about how planetesimals form in nebular disks and subsequently evolve.

## **OBSERVING DESCRIPTION**

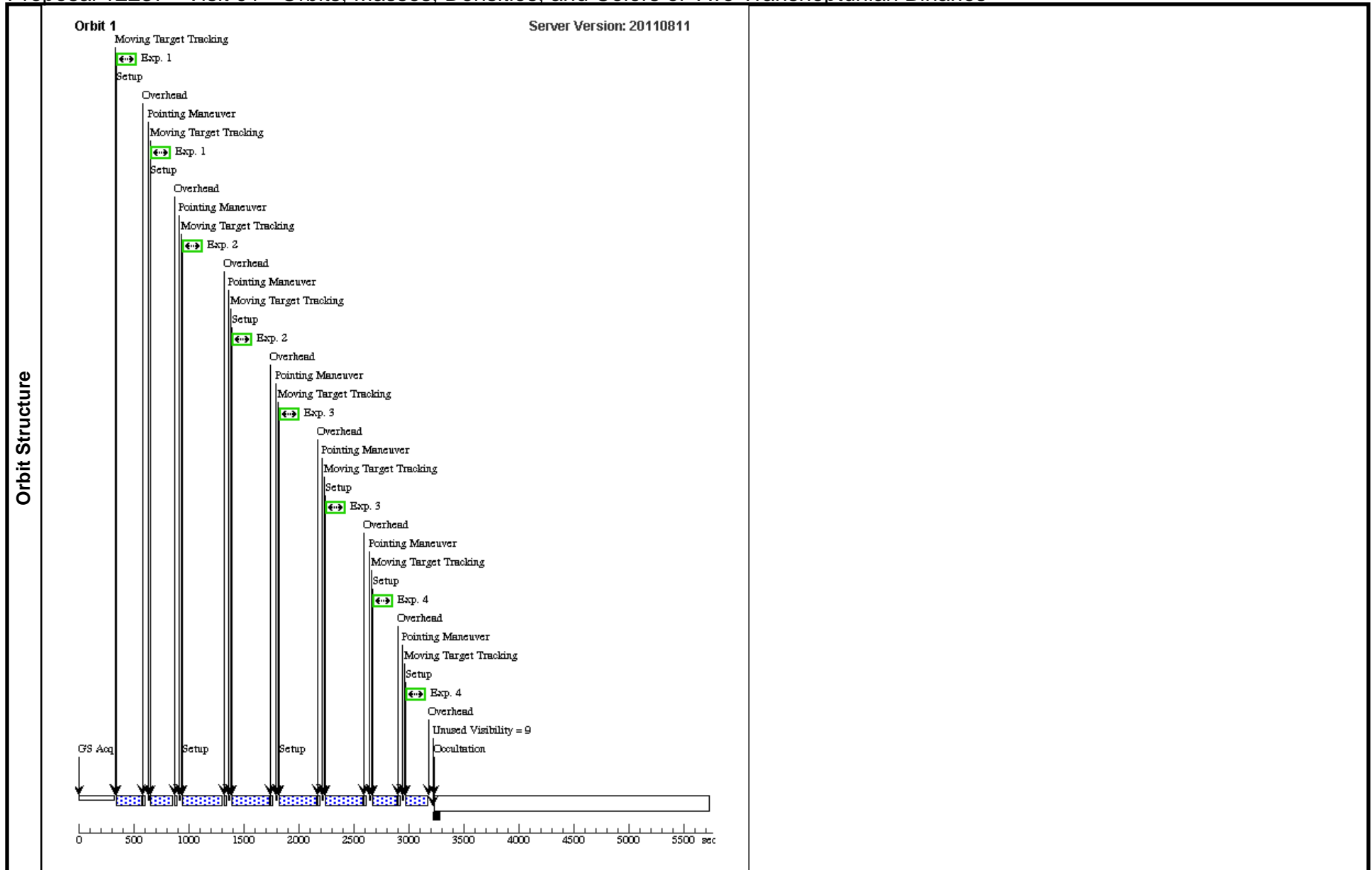
Strategically timed HST observations of binary TNOs which are also being observed by Herschel. The job of HST is to obtain relative astrometry, from which we determine the mutual orbits of the binary bodies, giving us their masses. Meanwhile, Herschel determines their surface areas. When we put these pieces of information together, we get the bulk densities.

Since we don't know the orbital periods a priori, we start with an initial pair of observations, then use Monte Carlo routines to work out optimal times for follow up observations. The visits to be scheduled this way start off being "on hold" until we give the go-ahead (in consultation with Tony Roman to ensure that they have a low impact on the scheduling team).

Proposal 12237 - Visit 01 - Orbits, Masses, Densities, and Colors of Two Transneptunian Binaries

Sat Sep 10 01:02:13 GMT 2011

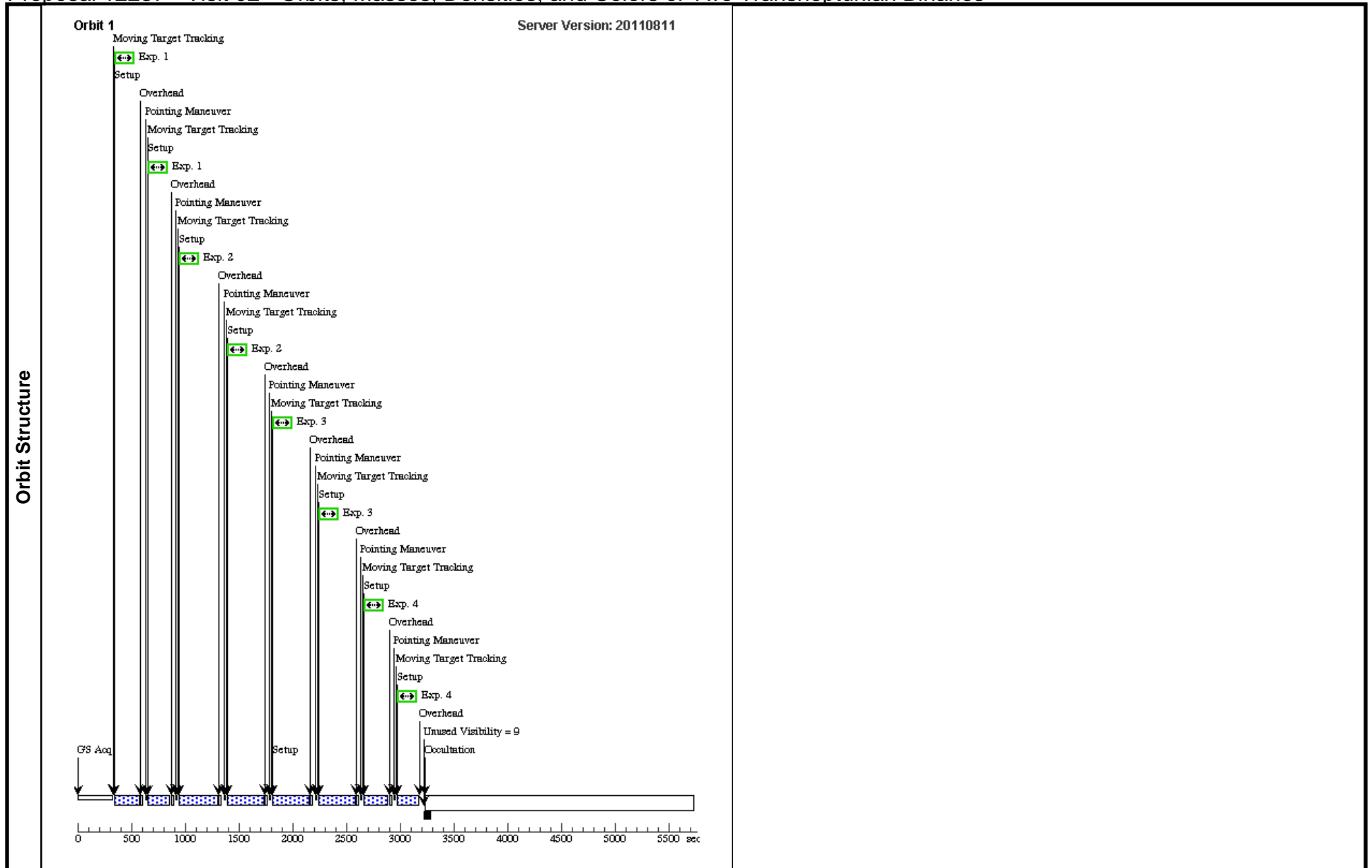
Visit	<b>Proposal 12237, Visit 01, completed</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS Special Requirements: BETWEEN 01-JUL-2010:00:00:00 AND 15-SEP-2010:00:00:00 <i>Comments: It's good to do the first visit to a particular target early in the observability window, in order to leave as much time as possible for follow-ups (this is because we don't yet know the period, so we don't yet know the optimal times for the follow-ups). Hence the timing requirement for visit 01. If this turns out to be too restrictive, we can absolutely relax it. If you foresee any problems with this, let's iterate.</i>									
	Patterns	#	Primary Pattern				Secondary Pattern			Exposures
		(1)	Pattern Type=WFC3-UVIS-DITHER-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)	174567		TYPE=ASTEROID,A=45.942227059000,E=0.143111631330,I=21.5221639250,O=184.180524020000,W=181.348001590000,M=261.218649180000,EQUINOX=J2000,EPOCH=18-JUN-2009:00:00:00				EARTH		
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(1) 174567		WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	CR-SPLIT=NO	POS TARG -0.158200,0.0289867	Pattern 1, Exps 1-1 in Visit 01 (1)	200 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	2	(1) 174567		WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F438W	CR-SPLIT=NO	POS TARG -0.153256,-0.144537	Pattern 1, Exps 2-2 in Visit 01 (1)	340 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	3	(1) 174567		WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F438W	CR-SPLIT=NO	POS TARG 0.0541835,0.0385166	Pattern 1, Exps 3-3 in Visit 01 (1)	340 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	4	(1) 174567		WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	CR-SPLIT=NO	POS TARG 0.0494375,-0.145331	Pattern 1, Exps 4-4 in Visit 01 (1)	200 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]



Proposal 12237 - Visit 02 - Orbits, Masses, Densities, and Colors of Two Transneptunian Binaries

Sat Sep 10 01:02:15 GMT 2011

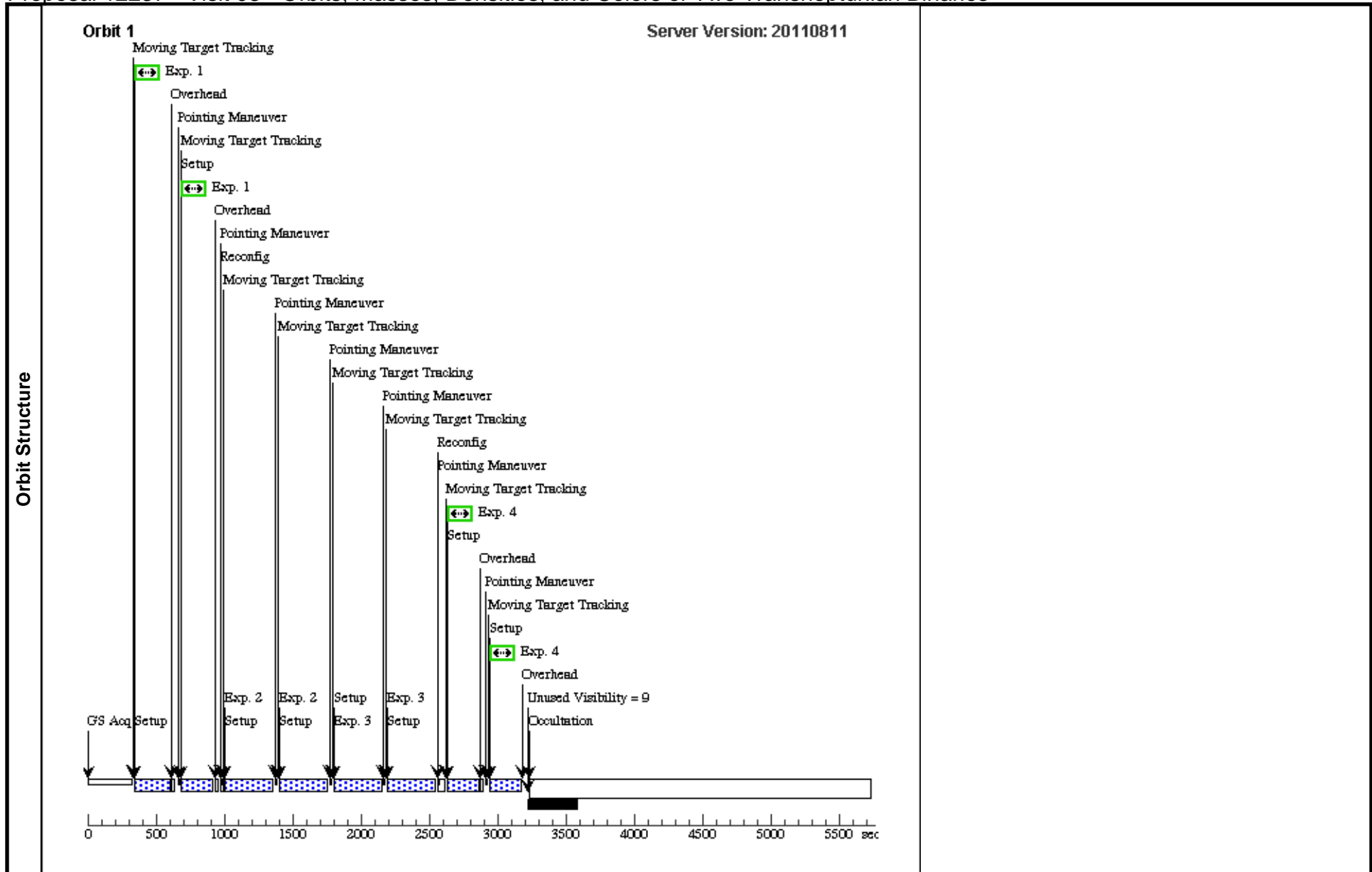
Visit	<b>Proposal 12237, Visit 02, completed</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS Special Requirements: AFTER 01 BY 1.25 D TO 1.8 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
		(1)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number 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)	174567	TYPE=ASTEROID,A=45.942227059000,E=0.143111631330,I=21.5221639250,O=184.180524020000,W=181.348001590000,M=261.218649180000,EQUINOX=J2000,EPOCH=18-JUN-2009:00:00:00				EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(1) 174567		WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	CR-SPLIT=NO	POS TARG -0.158200,0.0289867	Pattern 1, Exps 1-1 in Visit 02 (1)	200 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	2	(1) 174567		WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W	CR-SPLIT=NO	POS TARG -0.153256,-0.144537	Pattern 1, Exps 2-2 in Visit 02 (1)	340 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	3	(1) 174567		WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W	CR-SPLIT=NO	POS TARG 0.0541835,0.0385166	Pattern 1, Exps 3-3 in Visit 02 (1)	340 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	4	(1) 174567		WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	CR-SPLIT=NO	POS TARG 0.0494375,-0.145331	Pattern 1, Exps 4-4 in Visit 02 (1)	200 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]



Proposal 12237 - Visit 03 - Orbits, Masses, Densities, and Colors of Two Transneptunian Binaries

Sat Sep 10 01:02:16 GMT 2011

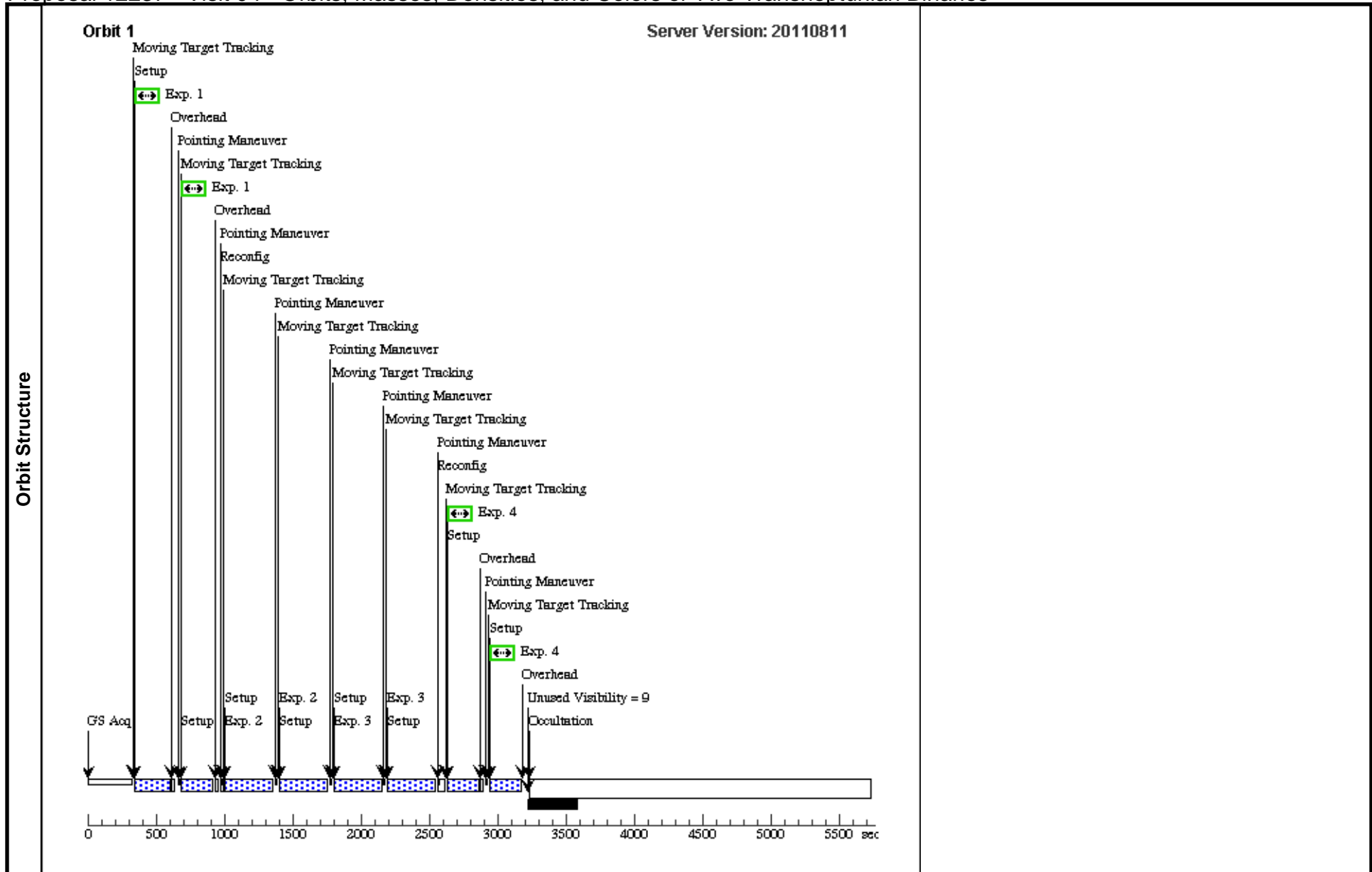
Visit	<b>Proposal 12237, Visit 03, completed</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/IR, WFC3/UVIS Special Requirements: BETWEEN 21-SEP-2010:00:00:00 AND 21-SEP-2010:07:00:00; BETWEEN 27-SEP-2010:08:00:00 AND 27-SEP-2010:23:00:00; ON HOLD On Hold Comments: Pending observer input									
	Patterns	#	Primary Pattern			Secondary Pattern			Exposures	
		(1)	Pattern Type=WFC3-UVIS-DITHER-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), (4)	
	(2)	Pattern Type=WFC3-IR-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.636 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false					(2), (3)		
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center			
	(1)	174567	TYPE=ASTEROID,A=45.942227059000,E=0.143111631330,I=21.5221639250,O=184.180524020000,W=181.348001590000,M=261.218649180000,EQUINOX=J2000,EPOCH=18-JUN-2009:00:00:00					EARTH		
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(1) 174567	(1) 174567	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	CR-SPLIT=NO	POS TARG -0.158200,0.0289867; GS ACQ SCENARIO BASE1B3	Pattern 1, Exps 1-1 in Visit 03 (1)	230 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	2	(1) 174567	(1) 174567	WFC3/IR, MULTIACCUM, IRSUB512	F110W	NSAMP=15; SAMP-SEQ=SPARS25		Pattern 2, Exps 2-2 in Visit 03 (2)	[=>(Pattern 1)] [=>(Pattern 2)]	[1]
	3	(1) 174567	(1) 174567	WFC3/IR, MULTIACCUM, IRSUB512	F160W	NSAMP=15; SAMP-SEQ=SPARS25		Pattern 2, Exps 3-3 in Visit 03 (2)	[=>(Pattern 1)] [=>(Pattern 2)]	[1]
4	(1) 174567	(1) 174567	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	CR-SPLIT=NO	POS TARG 0.0494375,-0.145331	Pattern 1, Exps 4-4 in Visit 03 (1)	230 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]	



Proposal 12237 - Visit 04 - Orbits, Masses, Densities, and Colors of Two Transneptunian Binaries

Sat Sep 10 01:02:17 GMT 2011

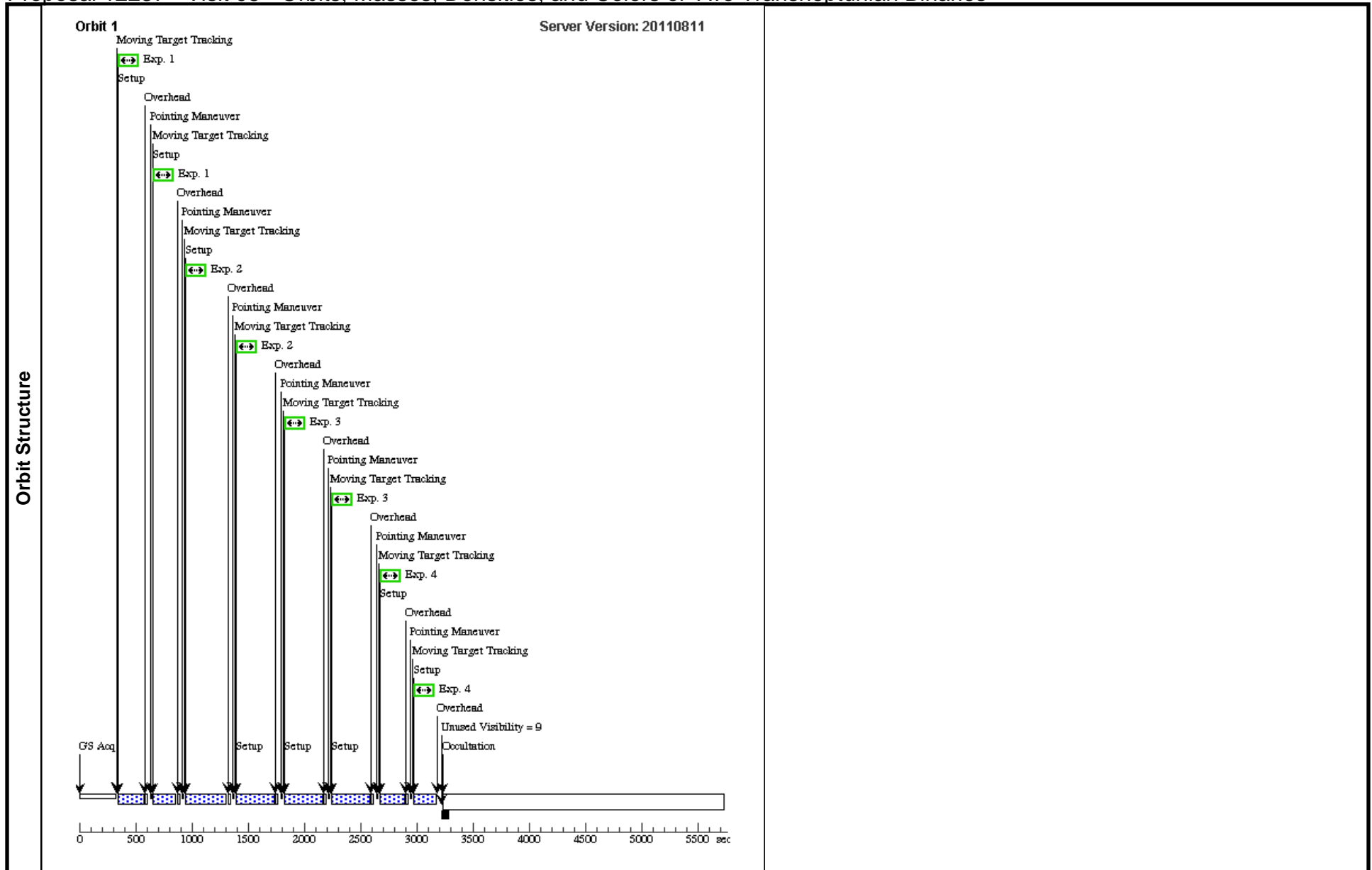
Visit	<b>Proposal 12237, Visit 04, completed</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/IR, WFC3/UVIS Special Requirements: BETWEEN 09-JUL-2011:16:00:00 AND 10-JUL-2011:02:00:00; BETWEEN 10-JUL-2011:19:00:00 AND 11-JUL-2011:05:00:00; BETWEEN 15-JUL-2011:00:00:00 AND 15-JUL-2011:20:00:00; BETWEEN 16-JUL-2011:13:00:00 AND 16-JUL-2011:23:00:00; ON HOLD On Hold Comments: Pending observer input									
	#	Primary Pattern	Secondary Pattern	Exposures						
Patterns	(1)	Pattern Type=WFC3-UVIS-DITHER-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), (4)						
	(2)	Pattern Type=WFC3-IR-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.636 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false	(2), (3)						
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center			
	(1)	174567	TYPE=ASTEROID,A=45.942227059000,E=0.143111631330,I=21.5221639250,O=184.180524020000,W=181.348001590000,M=261.218649180000,EQUINOX=J2000,EPOCH=18-JUN-2009:00:00:00				EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(1) 174567		WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	CR-SPLIT=NO	POS TARG -0.158200,0.0289867	Pattern 1, Exps 1-1 in Visit 04 (1)	230 Secs [==>(Pattern 1)] [==>(Pattern 2)]	[1]
	2	(1) 174567		WFC3/IR, MULTIACCUM, IRSUB512	F160W	NSAMP=15; SAMP-SEQ=SPAR S25		Pattern 2, Exps 2-2 in Visit 04 (2)	[==>(Pattern 1)] [==>(Pattern 2)]	[1]
	3	(1) 174567		WFC3/IR, MULTIACCUM, IRSUB512	F110W	NSAMP=15; SAMP-SEQ=SPAR S25		Pattern 2, Exps 3-3 in Visit 04 (2)	[==>(Pattern 1)] [==>(Pattern 2)]	[1]
4	(1) 174567		WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	CR-SPLIT=NO	POS TARG 0.0494375,-0.145331	Pattern 1, Exps 4-4 in Visit 04 (1)	230 Secs [==>(Pattern 1)] [==>(Pattern 2)]	[1]	



Proposal 12237 - Visit 05 - Orbits, Masses, Densities, and Colors of Two Transneptunian Binaries

Sat Sep 10 01:02:18 GMT 2011

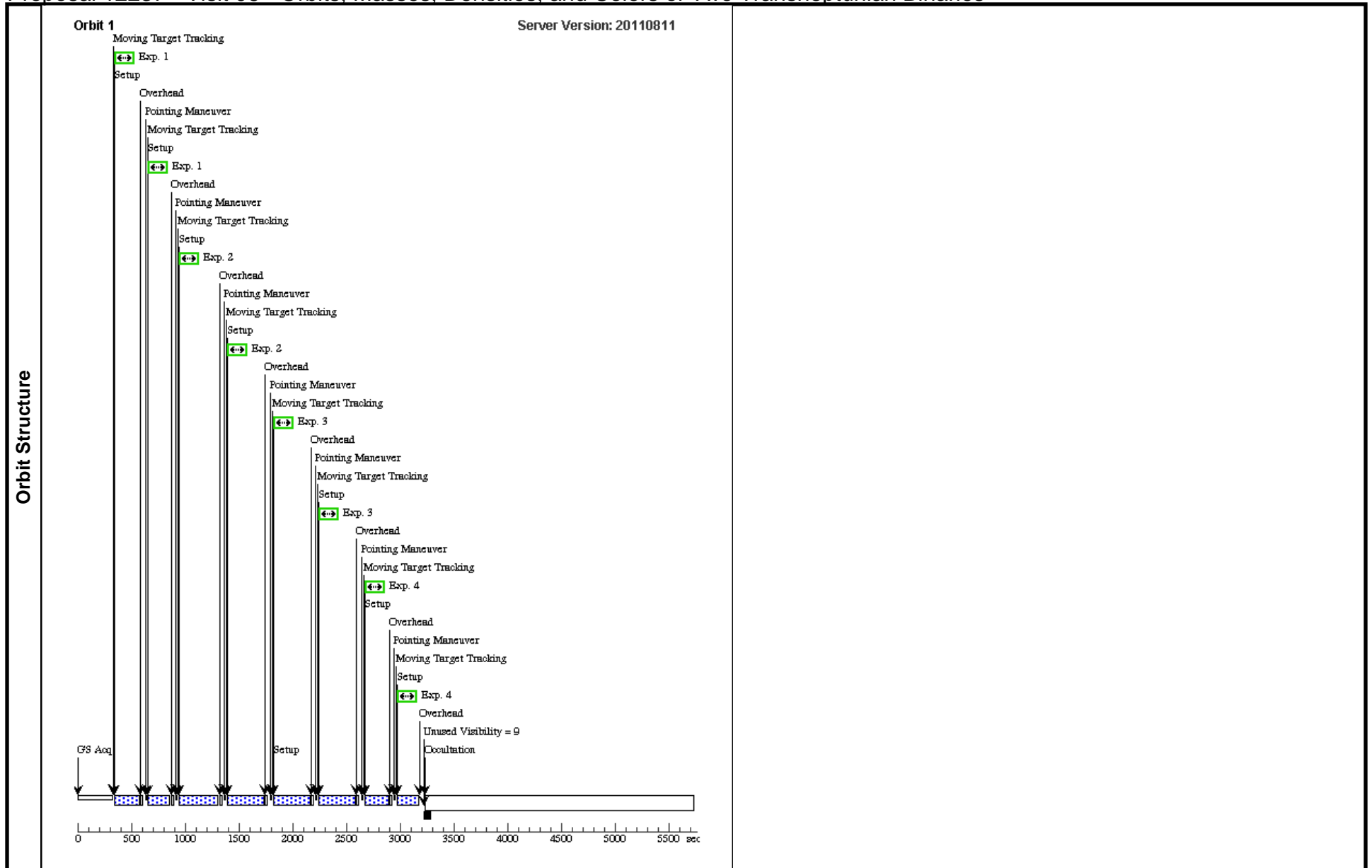
Visit	<b>Proposal 12237, Visit 05, pi</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS Special Requirements: BEFORE 31-MAR-2012; ON HOLD On Hold Comments: Pending observer input									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
		(1)	Pattern Type=WFC3-UVIS-DITHER-LINE 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			
	(2)	2005EF298	TYPE=ASTEROID,A=43.870431820000,E=0.087743329425,I=2.87015162560,O=118.070765340000,W=77.911465136000,M=325.997912140000,EQUI NOX=J2000,EPOCH=18-JUN-2009:00:00:00				EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(2) 2005EF298	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	CR-SPLIT=NO	POS TARG -0.158200,0.0289867	Pattern 1, Exps 1-1 in Visit 05 (1)	200 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	2		(2) 2005EF298	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F438W	CR-SPLIT=NO	POS TARG -0.153256,-0.144537	Pattern 1, Exps 2-2 in Visit 05 (1)	340 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	3		(2) 2005EF298	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F438W	CR-SPLIT=NO	POS TARG 0.0541835,0.0385166	Pattern 1, Exps 3-3 in Visit 05 (1)	340 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	4		(2) 2005EF298	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	CR-SPLIT=NO	POS TARG 0.0494375,-0.145331	Pattern 1, Exps 4-4 in Visit 05 (1)	200 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]



Proposal 12237 - Visit 06 - Orbits, Masses, Densities, and Colors of Two Transneptunian Binaries

Sat Sep 10 01:02:18 GMT 2011

<b>Visit</b>	<b>Proposal 12237, Visit 06, completed</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS Special Requirements: BETWEEN 01-MAR-2011:00:00:00 AND 25-MAR-2011:00:00:00 <i>Comments: It's good to do the first visit to a particular target early in the observability window, in order to leave as much time as possible for follow-ups (this is because we don't yet know the period, so we don't yet know the optimal times for the follow-ups). Hence the timing requirement for visit 06. If this turns out to be too restrictive, we can absolutely relax it. If you forsee any problems with this, let's iterate.</i>									
	<b>Patterns</b>	<b>#</b>	<b>Primary Pattern</b>				<b>Secondary Pattern</b>			<b>Exposures</b>
(1)		Pattern Type=WFC3-UVIS-DITHER- 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)	
<b>Solar System Targets</b>	<b>#</b>	<b>Name</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>	<b>Window</b>	<b>Ephem Center</b>			
	(2)	2005EF298		TYPE=ASTEROID,A=43.8704318200 00,E=0.087743329425,I=2.870151625 60,O=118.070765340000,W=77.91146 5136000,M=325.997912140000,EQUI NOX=J2000,EPOCH=18-JUN- 2009:00:00:00				EARTH		
<b>Exposures</b>	<b>#</b>	<b>Label</b>	<b>Target</b>	<b>Config,Mode,Aperture</b>	<b>Spectral Els.</b>	<b>Opt. Params.</b>	<b>Special Reqs.</b>	<b>Groups</b>	<b>Exp. Time/[Actual Dur.]</b>	<b>Orbit</b>
	1	(2) 2005EF298		WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	CR-SPLIT=NO	POS TARG -0.1582 00,0.0289867	Pattern 1, Exps 1-1 i n Visit 06 (1)	200 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	2	(2) 2005EF298		WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F438W	CR-SPLIT=NO	POS TARG -0.1532 56,-0.144537	Pattern 1, Exps 2-2 i n Visit 06 (1)	340 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	3	(2) 2005EF298		WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F438W	CR-SPLIT=NO	POS TARG 0.05418 35,0.0385166	Pattern 1, Exps 3-3 i n Visit 06 (1)	340 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	4	(2) 2005EF298		WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	CR-SPLIT=NO	POS TARG 0.04943 75,-0.145331	Pattern 1, Exps 4-4 i n Visit 06 (1)	200 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]



Proposal 12237 - Visit 07 - Orbits, Masses, Densities, and Colors of Two Transneptunian Binaries

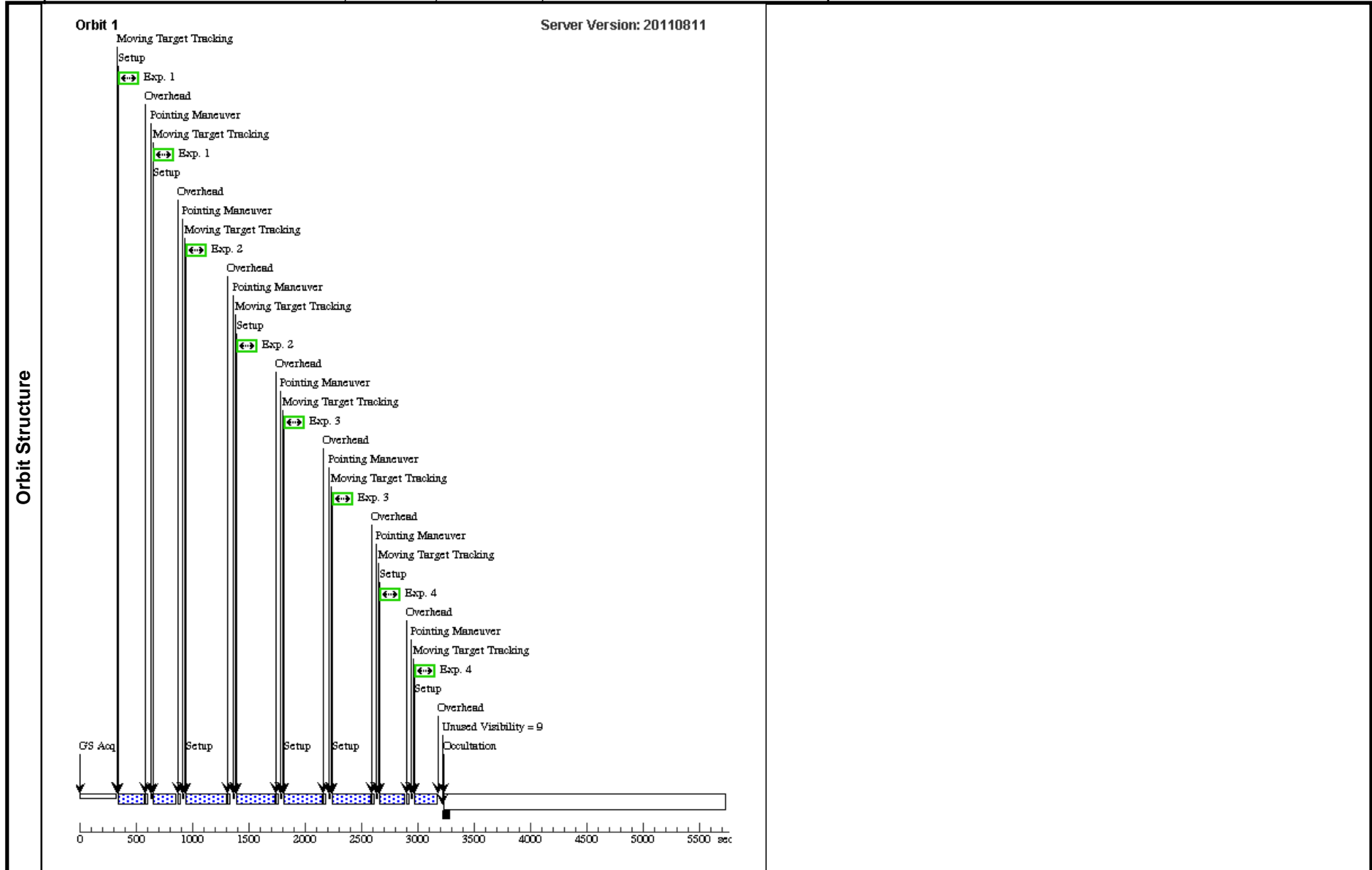
Sat Sep 10 01:02:19 GMT 2011

<b>Visit</b>	<b>Proposal 12237, Visit 07, completed</b>		
	<b>Diagnostic Status: No Diagnostics</b>		
	Scientific Instruments: WFC3/UVIS		
	Special Requirements: AFTER 06 BY 6.5 D TO 8.5 D		

<b>Patterns</b>	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-UVIS-DITHER-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	

<b>Solar System Targets</b>	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
	(2)	2005EF298	TYPE=ASTEROID,A=43.8704318200 00,E=0.087743329425,I=2.870151625 60,O=118.070765340000,W=77.91146 5136000,M=325.997912140000,EQUI NOX=J2000,EPOCH=18-JUN- 2009:00:00:00				

<b>Exposures</b>	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(2) 2005EF298	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	CR-SPLIT=NO	POS TARG -0.1582 00,0.0289867	Pattern 1, Exps 1-1 in Visit 07 (1)	200 Secs	
									[=>(Pattern 1)]	[1]
									[=>(Pattern 2)]	
	2		(2) 2005EF298	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W	CR-SPLIT=NO	POS TARG -0.1532 56,-0.144537	Pattern 1, Exps 2-2 in Visit 07 (1)	340 Secs	
								[=>(Pattern 1)]	[1]	
								[=>(Pattern 2)]		
3		(2) 2005EF298	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F814W	CR-SPLIT=NO	POS TARG 0.05418 35,0.0385166	Pattern 1, Exps 3-3 in Visit 07 (1)	340 Secs		
								[=>(Pattern 1)]	[1]	
								[=>(Pattern 2)]		
4		(2) 2005EF298	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	CR-SPLIT=NO	POS TARG 0.04943 75,-0.145331	Pattern 1, Exps 4-4 in Visit 07 (1)	200 Secs		
								[=>(Pattern 1)]	[1]	
								[=>(Pattern 2)]		

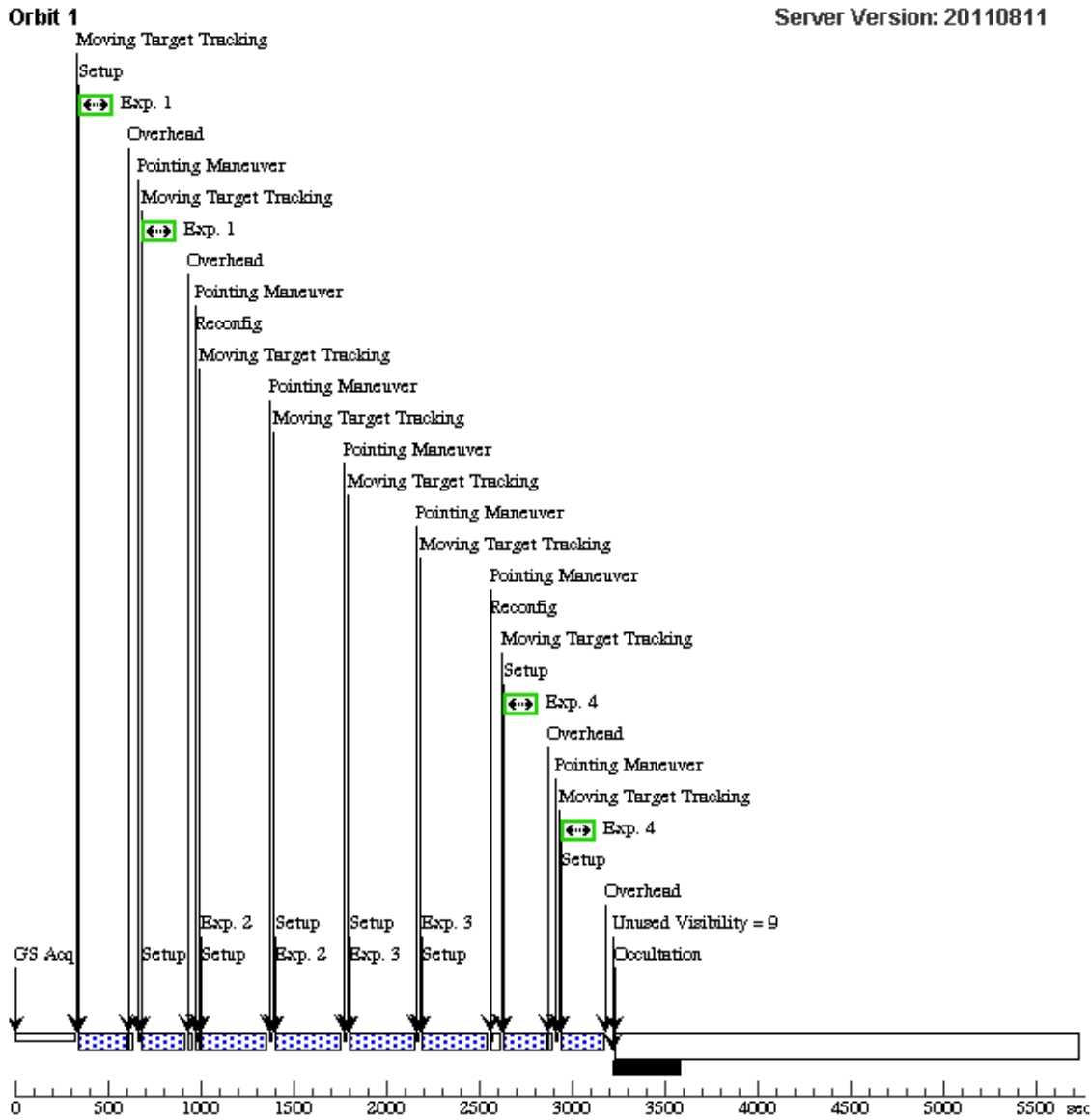


Proposal 12237 - Visit 08 - Orbits, Masses, Densities, and Colors of Two Transneptunian Binaries

Sat Sep 10 01:02:19 GMT 2011

Visit	<b>Proposal 12237, Visit 08, completed</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/IR, WFC3/UVIS Special Requirements: BETWEEN 22-APR-2011 AND 24-APR-2011; ON HOLD On Hold Comments: Pending observer input									
	Patterns	#	Primary Pattern			Secondary Pattern			Exposures	
		(1)	Pattern Type=WFC3-UVIS-DITHER-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), (4)	
	(2)	Pattern Type=WFC3-IR-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.636 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false					(2), (3)		
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center			
	(2)	2005EF298	TYPE=ASTEROID,A=43.870431820000,E=0.087743329425,I=2.87015162560,O=118.070765340000,W=77.911465136000,M=325.997912140000,EQUINOX=J2000,EPOCH=18-JUN-2009:00:00:00				EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(2) 2005EF298	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	CR-SPLIT=NO	POS TARG -0.158200,0.0289867; GS ACQ SCENARIO BASE1B3	Pattern 1, Exps 1-1 in Visit 08 (1)	230 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	2		(2) 2005EF298	WFC3/IR, MULTIACCUM, IRSUB512	F110W	NSAMP=15; SAMP-SEQ=SPARS25		Pattern 2, Exps 2-2 in Visit 08 (2)	[=>(Pattern 1)] [=>(Pattern 2)]	[1]
	3		(2) 2005EF298	WFC3/IR, MULTIACCUM, IRSUB512	F160W	NSAMP=15; SAMP-SEQ=SPARS25		Pattern 2, Exps 3-3 in Visit 08 (2)	[=>(Pattern 1)] [=>(Pattern 2)]	[1]
4		(2) 2005EF298	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	CR-SPLIT=NO	POS TARG 0.0494375,-0.145331	Pattern 1, Exps 4-4 in Visit 08 (1)	230 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]	

Orbit Structure



Proposal 12237 - Visit 09 - Orbits, Masses, Densities, and Colors of Two Transneptunian Binaries

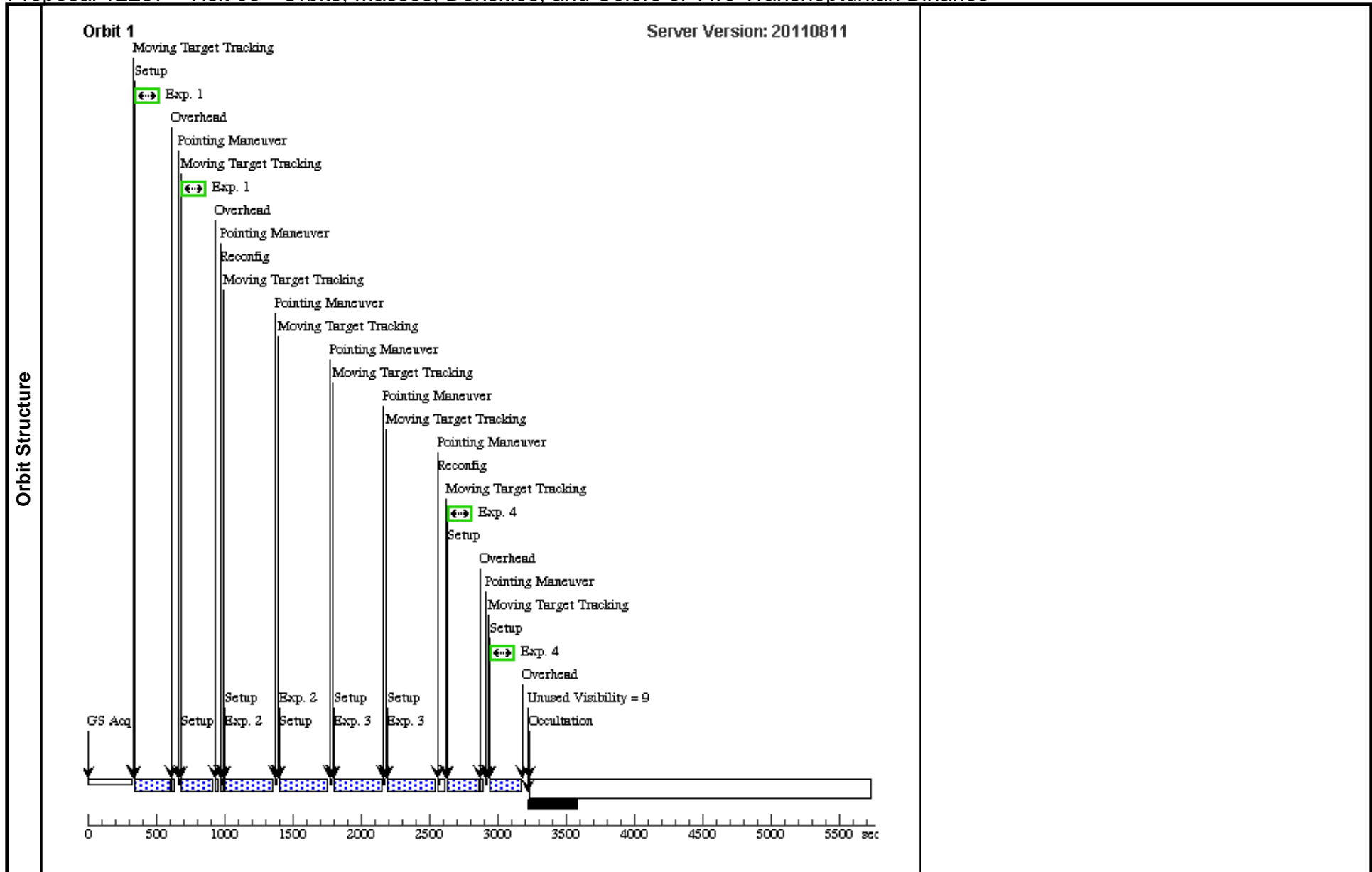
Sat Sep 10 01:02:20 GMT 2011

<b>Visit</b>	<b>Proposal 12237, Visit 09, completed</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/IR, WFC3/UVIS Special Requirements: BETWEEN 05-JUL-2011:00:00:00 AND 01-AUG-2011:00:00:00; ON HOLD On Hold Comments: Pending observer input		
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<b>Patterns</b>	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-UVIS-DITHER-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	
(2)	Pattern Type=WFC3-IR-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.636 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false		(2), (3)

<b>Solar System Targets</b>	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
	(2)	2005EF298		TYPE=ASTEROID,A=43.870431820000,E=0.087743329425,I=2.87015162560,O=118.070765340000,W=77.911465136000,M=325.997912140000,EQUI NOX=J2000,EPOCH=18-JUN-2009:00:00:00			

<b>Exposures</b>	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(2) 2005EF298	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	CR-SPLIT=NO	POS TARG -0.158200,0.0289867	Pattern 1, Exps 1-1 in Visit 09 (1)	230 Secs [==>(Pattern 1)] [==>(Pattern 2)]	[1]
2		(2) 2005EF298	WFC3/IR, MULTIACCUM, IRSUB512	F110W	NSAMP=15; SAMP-SEQ=SPAR S25		Pattern 2, Exps 2-2 in Visit 09 (2)	[==>(Pattern 1)] [==>(Pattern 2)]	[1]	
3		(2) 2005EF298	WFC3/IR, MULTIACCUM, IRSUB512	F160W	NSAMP=15; SAMP-SEQ=SPAR S25		Pattern 2, Exps 3-3 in Visit 09 (2)	[==>(Pattern 1)] [==>(Pattern 2)]	[1]	
4		(2) 2005EF298	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	CR-SPLIT=NO	POS TARG 0.0494375,-0.145331	Pattern 1, Exps 4-4 in Visit 09 (1)	230 Secs [==>(Pattern 1)] [==>(Pattern 2)]	[1]	



Proposal 12237 - Visit 10 - Orbits, Masses, Densities, and Colors of Two Transneptunian Binaries

Sat Sep 10 01:02:21 GMT 2011

Visit	<b>Proposal 12237, Visit 10, completed</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS Special Requirements: BEFORE 11-MAY-2011; ON HOLD <i>On Hold Comments: Pending observer input</i>									
	Patterns	#	Primary Pattern			Secondary Pattern			Exposures	
		(1)	Pattern Type=WFC3-UVIS-DITHER-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			
	(2)	2005EF298	TYPE=ASTEROID,A=43.870431820000,E=0.087743329425,I=2.87015162560,O=118.070765340000,W=77.911465136000,M=325.997912140000,EQUI NOX=J2000,EPOCH=18-JUN-2009:00:00:00				EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(2) 2005EF298	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	CR-SPLIT=NO	POS TARG -0.158200,0.0289867; GS ACQ SCENARIO SINGLE	Pattern 1, Exps 1-1 in Visit 10 (1)	200 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	2		(2) 2005EF298	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F438W	CR-SPLIT=NO	POS TARG -0.153256,-0.144537	Pattern 1, Exps 2-2 in Visit 10 (1)	340 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	3		(2) 2005EF298	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F438W	CR-SPLIT=NO	POS TARG 0.0541835,0.0385166	Pattern 1, Exps 3-3 in Visit 10 (1)	340 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	4		(2) 2005EF298	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F606W	CR-SPLIT=NO	POS TARG 0.0494375,-0.145331	Pattern 1, Exps 4-4 in Visit 10 (1)	200 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]

