



13315 - Pluto Satellite Orbits in Support of New Horizons

Cycle: 21, 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) PLUTO-SYSTEM	WFC3/UVIS	1	21-Jul-2014 21:00:39.0	yes
02	(1) PLUTO-SYSTEM	WFC3/UVIS	1	21-Jul-2014 21:00:41.0	yes
03	(1) PLUTO-SYSTEM	WFC3/UVIS	1	21-Jul-2014 21:00:44.0	yes
04	(1) PLUTO-SYSTEM	WFC3/UVIS	1	21-Jul-2014 21:00:47.0	yes
05	(1) PLUTO-SYSTEM	WFC3/UVIS	1	21-Jul-2014 21:00:49.0	yes
06	(1) PLUTO-SYSTEM	WFC3/UVIS	1	21-Jul-2014 21:00:53.0	yes
07	(1) PLUTO-SYSTEM	WFC3/UVIS	1	21-Jul-2014 21:00:56.0	yes
08	(1) PLUTO-SYSTEM	WFC3/UVIS	1	21-Jul-2014 21:00:58.0	yes
09	(1) PLUTO-SYSTEM	WFC3/UVIS	1	21-Jul-2014 21:01:00.0	yes
10	(1) PLUTO-SYSTEM	WFC3/UVIS	1	21-Jul-2014 21:01:02.0	yes
11	(1) PLUTO-SYSTEM	WFC3/UVIS	1	21-Jul-2014 21:01:04.0	yes
12	(1) PLUTO-SYSTEM	WFC3/UVIS	1	21-Jul-2014 21:01:06.0	yes

12 Total Orbits Used

ABSTRACT

We propose a sequence of observations that will significantly improve the orbit of P/2011 P1 and P/2012 P1 and provide useful improvements to the orbits of other satellites in the Pluto system. The orbit determination work for the newest satellite discoveries are critically needed so that New Horizons can know where to point its instruments at close approach. These data will also be useful for improved mass constraints on the outer satellites as well as refining our knowledge of the photometric properties of all objects in the Pluto system. In particular, lightcurve and color evolution will be monitored by these observations for use in constraining models of seasonal evolution on Pluto.

OBSERVING DESCRIPTION

Each visit is identically constructed except for a slight exposure time adjustment for solar phase angle. The timing for all visits is designed to provide nearly uniform astrometric coverage as a function of the orbital longitude of the satellites in the Pluto system. Within each visit there are a series of short, medium, and long duration exposures designed to cover the large dynamic range of the Pluto system and to provide astrometric ties to well-understood wavelengths. The shortest exposures prevent saturation of Pluto and occur at the start of the visit. The longest duration exposure is set to give adequate signal on the faintest satellites, P/2011 P1 and P/2012 P1 (otherwise known as P4 and P5). The exposure time is set as a compromise between per-frame photometric depth and minimization of lost pixels due to over-exposure from Pluto, Charon and field stars in the very crowded field Pluto is presently moving through. The medium exposure at the end serves to bridge the gap in brightness range between these two extremes while still providing useful detections of Nix and Hydra.

----- Additional Comments -----

The scheduling windows are set to ensure an SAA-free period but there will be more than one possible orbit that is useable. Once the STScI proposal scheduling staff can provide actual times for the scheduled orbits we can perform checks that will help to avoid orbits compromised by bright star

Proposal 13315 (STScI Edit Number: 3, Created: Monday, July 21, 2014 8:01:08 PM EST) - Overview

contamination in our FOV as well as determine if we need off-nominal roll tweaks to prevent the faint outer satellites from falling on diffraction spikes of Pluto or Charon. This can be done as soon as the observations are assigned a specific visibility window within the much coarser time-constraints imposed by the proposal.

The dithering pattern we use is a combination of the standard line pattern and pos-targ values that help fill the unit pixel while providing some slightly larger dithering as well. The entire pattern is biased by (+4.0, +0.3) to move the system away from the bad columns near the center of the sub-array. If the location of default pointing within this sub-array changes, we will have to update all of the pos-targ values.

Proposal 13315 - Visit 01 - Pluto Satellite Orbits in Support of New Horizons

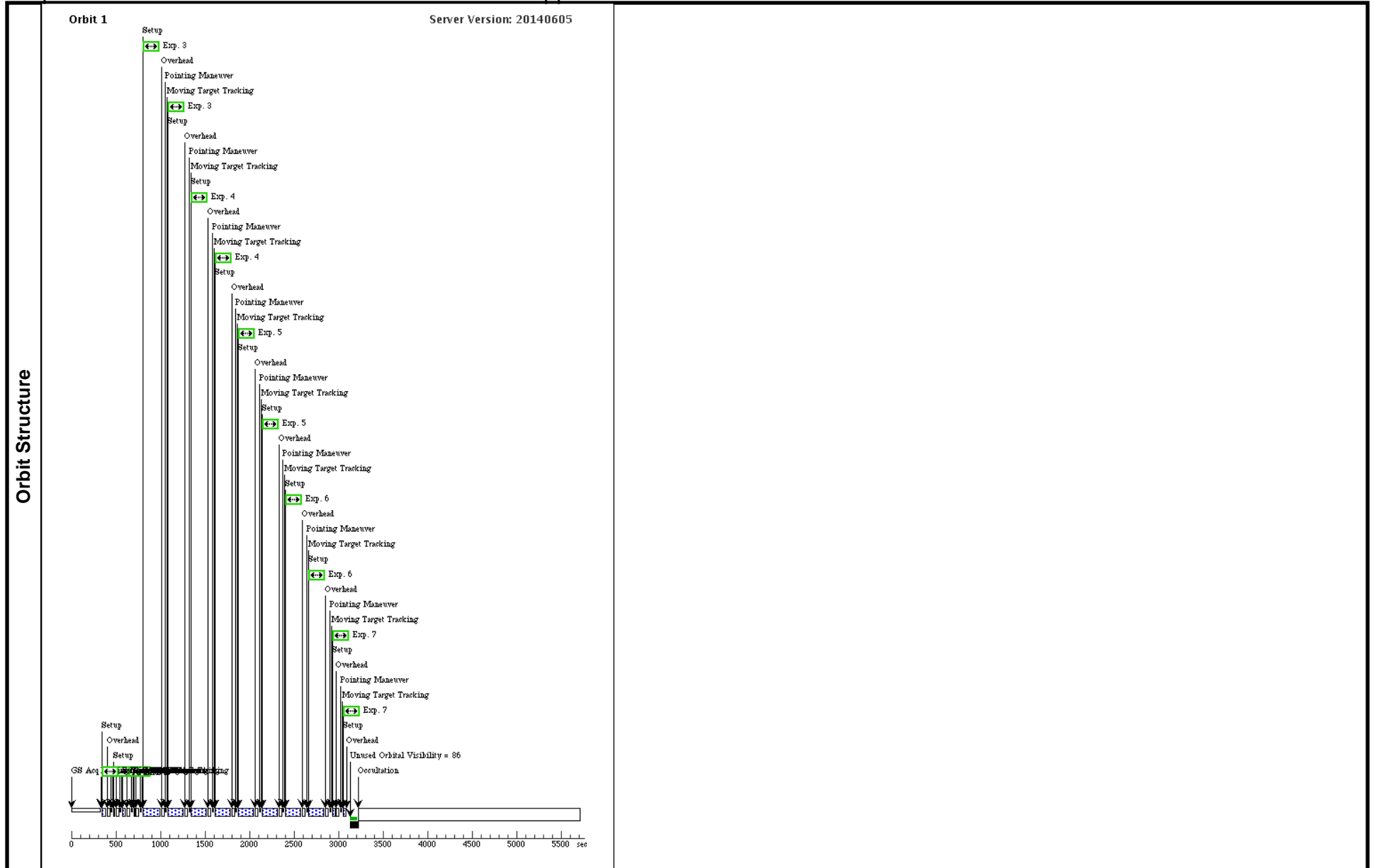
Tue Jul 22 01:01:08 GMT 2014

Visit	Proposal 13315, Visit 01, completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: PCS MODE FINE; ORIENT 257.3D TO 257.3 D; BETWEEN 13-APR-2014:13:21:37 AND 14-APR-2014:01:21:37 <i>Comments: The set of visits provided is a linked set of observations to provide a very specific observational cadence of the Pluto system. It is specially chosen to optimize the coverage of the system given the five major periods (Charon, Nix, P4, Hydra, and P5 orbital periods). All visits are given individual specific scheduling window to maintain this cadence and the windows provided are 12 hours long (+/- 6 hours from nominal) to make the program more easily schedulable. The actual length of this window may not be critical (though we'd rather not extend it much longer than this without considerable thought). The visits are sorted by time but are pseudo-random in sub-earth longitude on each body. Once the visits have been scheduled, we need to check for contamination by bright stars (rare) and to make sure the faint satellites do not fall on diffraction spikes from Pluto or Charon. If they do, we will provide a small off-nominal roll to eliminate the problem. This is the same procedure we used for our Cycle 20 observations.</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), (5), (6), (7)			
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
	(1)	PLUTO-SYSTEM	STD=PLUTO				EARTH

Proposal 13315 - Visit 01 - Pluto Satellite Orbits in Support of New Horizons

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Pluto Blue	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F438W	CR-SPLIT=NO	POS TARG 3.96520, 0.294044	Pattern 1, Exps 1-1 in Visit 01 (1)	12 Secs (24 Secs)	
									[==>(Pattern 1)]	[1]
									[==>(Pattern 2)]	
	2	Pluto Green	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F555W	CR-SPLIT=NO	POS TARG 4.01977, 0.213238	Pattern 1, Exps 2-2 in Visit 01 (1)	12 Secs (24 Secs)	
									[==>(Pattern 1)]	[1]
									[==>(Pattern 2)]	
	3	Satellite long1	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.93039, 0.197157	Pattern 1, Exps 3-3 in Visit 01 (1)	175 Secs (350 Secs)	
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
4	Satellite long2	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.87621, 0.277764	Pattern 1, Exps 4-4 in Visit 01 (1)	175 Secs (350 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
5	Satellite long3	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.96520, 0.294044	Pattern 1, Exps 5-5 in Visit 01 (1)	175 Secs (350 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
6	Satellite long4	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 4.01977, 0.213238	Pattern 1, Exps 6-6 in Visit 01 (1)	175 Secs (350 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
7	Satellite medium	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.93039, 0.197157	Pattern 1, Exps 7-7 in Visit 01 (1)	30 Secs (60 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		

Proposal 13315 - Visit 01 - Pluto Satellite Orbits in Support of New Horizons



Proposal 13315 - Visit 02 - Pluto Satellite Orbits in Support of New Horizons

Tue Jul 22 01:01:08 GMT 2014

Visit	<p>Proposal 13315, Visit 02, completed</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: WFC3/UVIS</p> <p>Special Requirements: PCS MODE FINE; ORIENT 263.3D TO 263.3 D; BETWEEN 26-APR-2014:20:43:14 AND 27-APR-2014:08:43:14</p> <p><i>Comments: The set of visits provided is a linked set of observations to provide a very specific observational cadence of the Pluto system. It is specially chosen to optimize the coverage of the system given the five major periods (Charon, Nix, P4, Hydra, and P5 orbital periods). All visits are given individual specific scheduling window to maintain this cadence and the windows provided are 12 hours long (+/- 6 hours from nominal) to make the program more easily schedulable. The actual length of this window may not be critical (though we'd rather not extend it much longer than this without considerable thought). The visits are sorted by time but are pseudo-random in sub-earth longitude on each body. Once the visits have been scheduled, we need to check for contamination by bright stars (rare) and to make sure the faint satellites do not fall on diffraction spikes from Pluto or Charon. If they do, we will provide a small off-nominal roll to eliminate the problem. This is the same procedure we used for our Cycle 20 observations.</i></p>						
	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), (5), (6), (7)	
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
	(1)	PLUTO-SYSTEM	STD=PLUTO				EARTH

Proposal 13315 - Visit 02 - Pluto Satellite Orbits in Support of New Horizons

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Pluto Blue	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F438W	CR-SPLIT=NO	POS TARG 3.96520, 0.294044	Pattern 1, Exps 1-1 in Visit 02 (1)	12 Secs (24 Secs)	
									[==>(Pattern 1)]	[1]
									[==>(Pattern 2)]	
	2	Pluto Green	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F555W	CR-SPLIT=NO	POS TARG 4.01977, 0.213238	Pattern 1, Exps 2-2 in Visit 02 (1)	12 Secs (24 Secs)	
									[==>(Pattern 1)]	[1]
									[==>(Pattern 2)]	
	3	Satellite long1	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.93039, 0.197157	Pattern 1, Exps 3-3 in Visit 02 (1)	175 Secs (350 Secs)	
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
4	Satellite long2	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.87621, 0.277764	Pattern 1, Exps 4-4 in Visit 02 (1)	175 Secs (350 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
5	Satellite long3	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.96520, 0.294044	Pattern 1, Exps 5-5 in Visit 02 (1)	175 Secs (350 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
6	Satellite long4	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 4.01977, 0.213238	Pattern 1, Exps 6-6 in Visit 02 (1)	175 Secs (350 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
7	Satellite medium	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.93039, 0.197157	Pattern 1, Exps 7-7 in Visit 02 (1)	30 Secs (60 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		

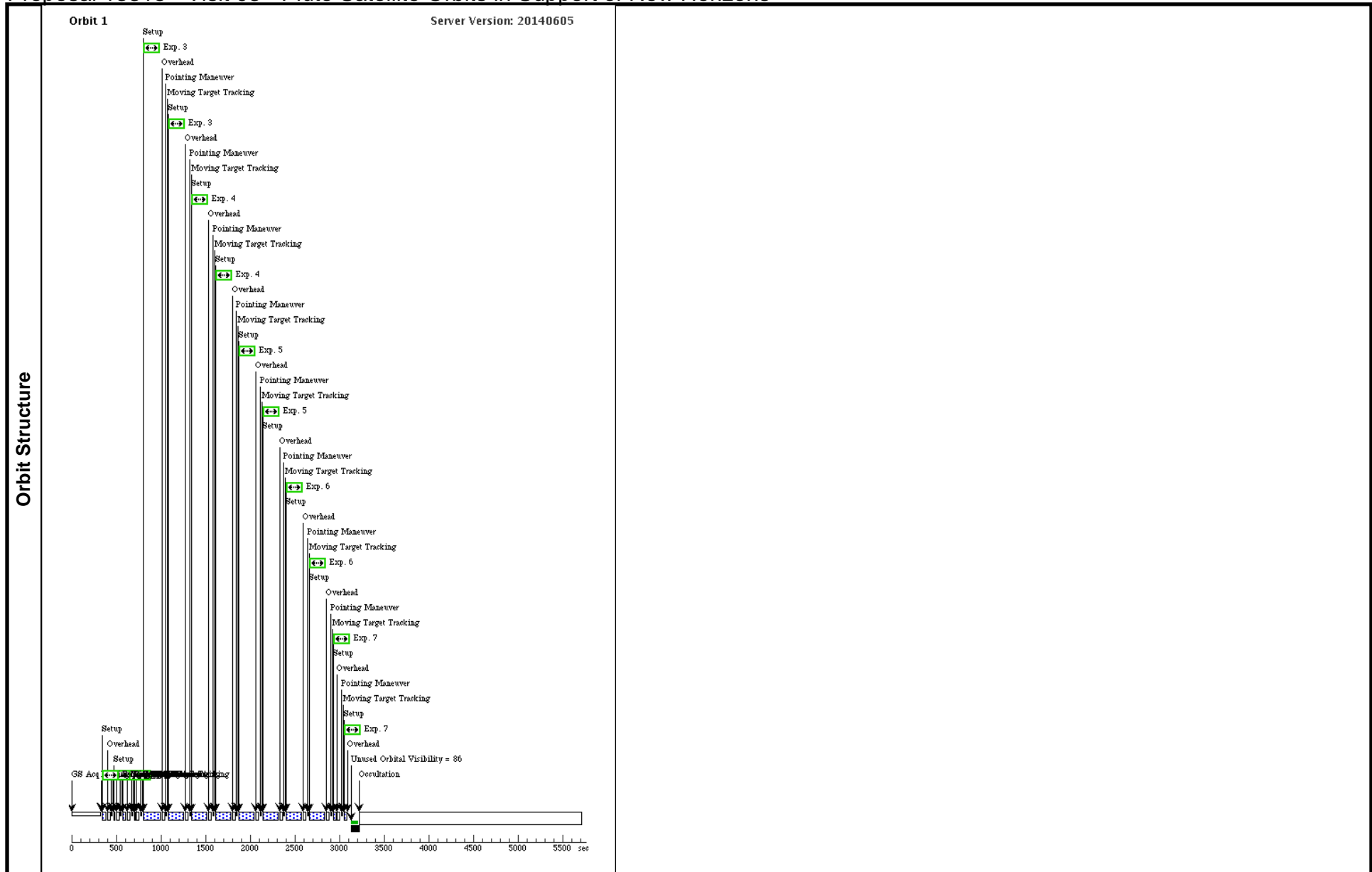
Proposal 13315 - Visit 03 - Pluto Satellite Orbits in Support of New Horizons

Tue Jul 22 01:01:09 GMT 2014

Visit	Proposal 13315, Visit 03, completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: PCS MODE FINE; ORIENT 258.9D TO 258.9 D; BETWEEN 18-MAY-2014:16:28:17 AND 19-MAY-2014:04:28:17 <i>Comments: The set of visits provided is a linked set of observations to provide a very specific observational cadence of the Pluto system. It is specially chosen to optimize the coverage of the system given the five major periods (Charon, Nix, P4, Hydra, and P5 orbital periods). All visits are given individual specific scheduling window to maintain this cadence and the windows provided are 12 hours long (+/- 6 hours from nominal) to make the program more easily schedulable. The actual length of this window may not be critical (though we'd rather not extend it much longer than this without considerable thought). The visits are sorted by time but are pseudo-random in sub-earth longitude on each body. Once the visits have been scheduled, we need to check for contamination by bright stars (rare) and to make sure the faint satellites do not fall on diffraction spikes from Pluto or Charon. If they do, we will provide a small off-nominal roll to eliminate the problem. This is the same procedure we used for our Cycle 20 observations.</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), (5), (6), (7)			
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
	(1)	PLUTO-SYSTEM	STD=PLUTO				EARTH

Proposal 13315 - Visit 03 - Pluto Satellite Orbits in Support of New Horizons

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Pluto Blue	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F438W	CR-SPLIT=NO	POS TARG 3.96520, 0.294044	Pattern 1, Exps 1-1 in Visit 03 (1)	12 Secs (24 Secs)	
									[==>(Pattern 1)]	[1]
									[==>(Pattern 2)]	
	2	Pluto Green	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F555W	CR-SPLIT=NO	POS TARG 4.01977, 0.213238	Pattern 1, Exps 2-2 in Visit 03 (1)	12 Secs (24 Secs)	
									[==>(Pattern 1)]	[1]
									[==>(Pattern 2)]	
	3	Satellite long1	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.93039, 0.197157	Pattern 1, Exps 3-3 in Visit 03 (1)	175 Secs (350 Secs)	
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
4	Satellite long2	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.87621, 0.277764	Pattern 1, Exps 4-4 in Visit 03 (1)	175 Secs (350 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
5	Satellite long3	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.96520, 0.294044	Pattern 1, Exps 5-5 in Visit 03 (1)	175 Secs (350 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
6	Satellite long4	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 4.01977, 0.213238	Pattern 1, Exps 6-6 in Visit 03 (1)	175 Secs (350 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
7	Satellite medium	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.93039, 0.197157	Pattern 1, Exps 7-7 in Visit 03 (1)	30 Secs (60 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		



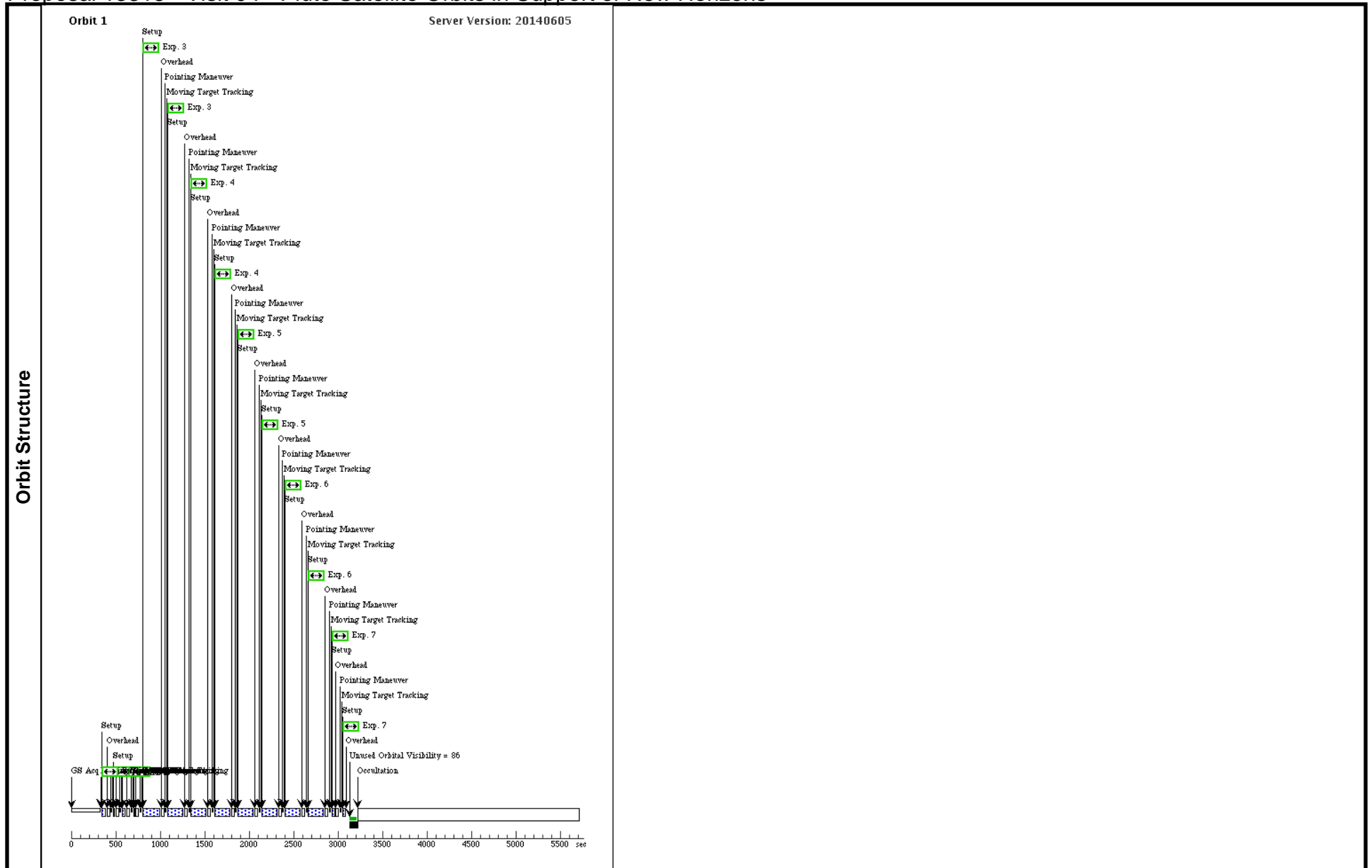
Proposal 13315 - Visit 04 - Pluto Satellite Orbits in Support of New Horizons

Tue Jul 22 01:01:09 GMT 2014

Visit	<p>Proposal 13315, Visit 04, completed</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: WFC3/UVIS</p> <p>Special Requirements: PCS MODE FINE; ORIENT 265.4D TO 265.4 D; BETWEEN 31-MAY-2014:23:49:55 AND 01-JUN-2014:11:49:55</p> <p><i>Comments: The set of visits provided is a linked set of observations to provide a very specific observational cadence of the Pluto system. It is specially chosen to optimize the coverage of the system given the five major periods (Charon, Nix, P4, Hydra, and P5 orbital periods). All visits are given individual specific scheduling window to maintain this cadence and the windows provided are 12 hours long (+/- 6 hours from nominal) to make the program more easily schedulable. The actual length of this window may not be critical (though we'd rather not extend it much longer than this without considerable thought). The visits are sorted by time but are pseudo-random in sub-earth longitude on each body. Once the visits have been scheduled, we need to check for contamination by bright stars (rare) and to make sure the faint satellites do not fall on diffraction spikes from Pluto or Charon. If they do, we will provide a small off-nominal roll to eliminate the problem. This is the same procedure we used for our Cycle 20 observations.</i></p>						
	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), (5), (6), (7)			
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
	(1)	PLUTO-SYSTEM	STD=PLUTO				EARTH

Proposal 13315 - Visit 04 - Pluto Satellite Orbits in Support of New Horizons

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Pluto Blue	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F438W	CR-SPLIT=NO	POS TARG 3.96520, 0.294044	Pattern 1, Exps 1-1 in Visit 04 (1)	12 Secs (24 Secs)	
									[==>(Pattern 1)]	[1]
									[==>(Pattern 2)]	
	2	Pluto Green	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F555W	CR-SPLIT=NO	POS TARG 4.01977, 0.213238	Pattern 1, Exps 2-2 in Visit 04 (1)	12 Secs (24 Secs)	
									[==>(Pattern 1)]	[1]
									[==>(Pattern 2)]	
	3	Satellite long1	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.93039, 0.197157	Pattern 1, Exps 3-3 in Visit 04 (1)	175 Secs (350 Secs)	
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
4	Satellite long2	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.87621, 0.277764	Pattern 1, Exps 4-4 in Visit 04 (1)	175 Secs (350 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
5	Satellite long3	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.96520, 0.294044	Pattern 1, Exps 5-5 in Visit 04 (1)	175 Secs (350 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
6	Satellite long4	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 4.01977, 0.213238	Pattern 1, Exps 6-6 in Visit 04 (1)	175 Secs (350 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
7	Satellite medium	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.93039, 0.197157	Pattern 1, Exps 7-7 in Visit 04 (1)	30 Secs (60 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		



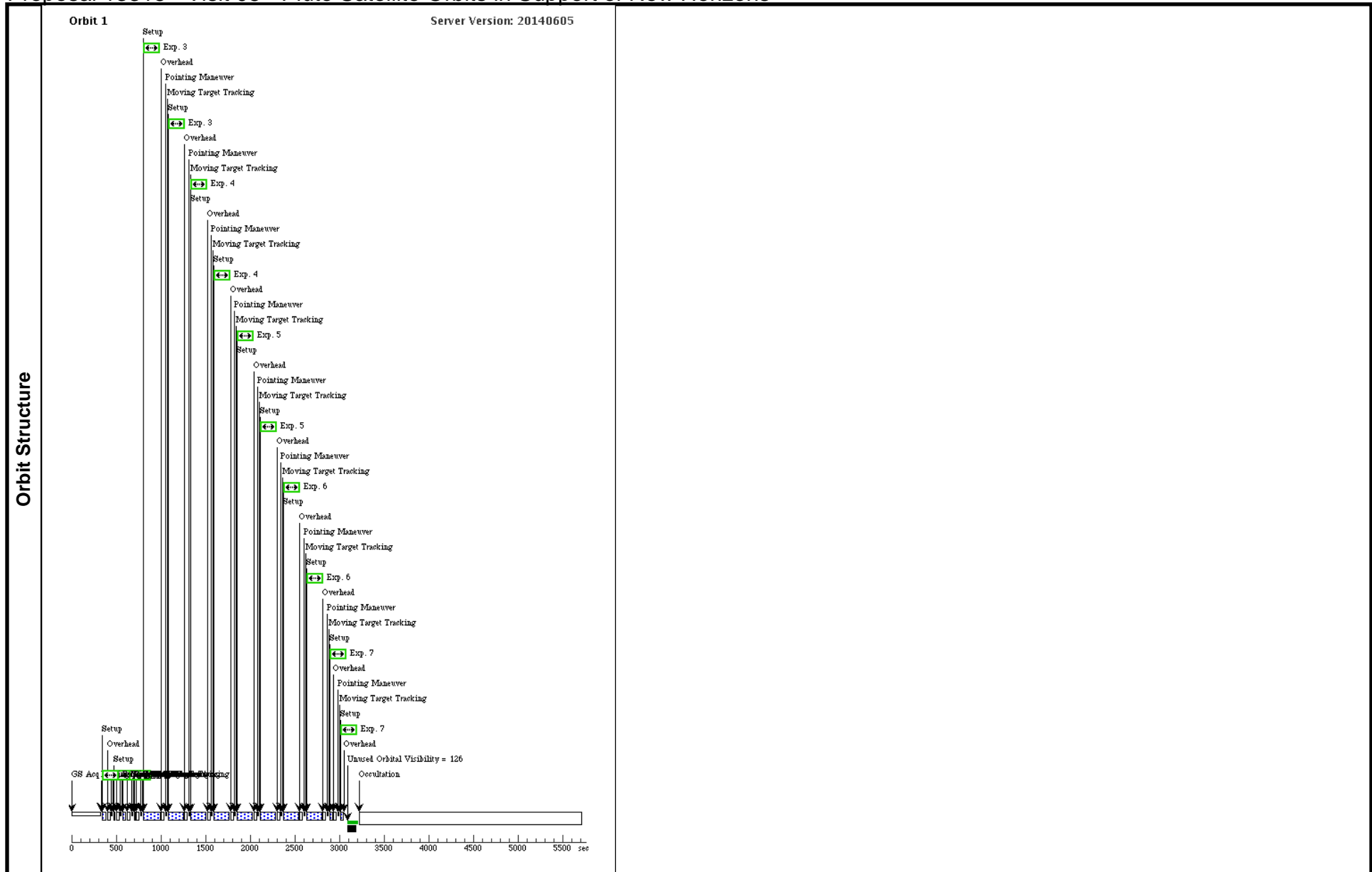
Proposal 13315 - Visit 05 - Pluto Satellite Orbits in Support of New Horizons

Tue Jul 22 01:01:09 GMT 2014

Visit	<p>Proposal 13315, Visit 05, completed</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: WFC3/UVIS</p> <p>Special Requirements: PCS MODE FINE; ORIENT 260.8D TO 260.8 D; BETWEEN 09-JUN-2014:12:13:21 AND 10-JUN-2014:00:13:21</p> <p><i>Comments: The set of visits provided is a linked set of observations to provide a very specific observational cadence of the Pluto system. It is specially chosen to optimize the coverage of the system given the five major periods (Charon, Nix, P4, Hydra, and P5 orbital periods). All visits are given individual specific scheduling window to maintain this cadence and the windows provided are 12 hours long (+/- 6 hours from nominal) to make the program more easily schedulable. The actual length of this window may not be critical (though we'd rather not extend it much longer than this without considerable thought). The visits are sorted by time but are pseudo-random in sub-earth longitude on each body. Once the visits have been scheduled, we need to check for contamination by bright stars (rare) and to make sure the faint satellites do not fall on diffraction spikes from Pluto or Charon. If they do, we will provide a small off-nominal roll to eliminate the problem. This is the same procedure we used for our Cycle 20 observations.</i></p>						
	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), (5), (6), (7)	
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
	(1)	PLUTO-SYSTEM	STD=PLUTO				EARTH

Proposal 13315 - Visit 05 - Pluto Satellite Orbits in Support of New Horizons

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Pluto Blue	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F438W	CR-SPLIT=NO	POS TARG 3.96520, 0.294044	Pattern 1, Exps 1-1 in Visit 05 (1)	12 Secs (24 Secs)	
									[==>(Pattern 1)]	[1]
									[==>(Pattern 2)]	
	2	Pluto Green	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F555W	CR-SPLIT=NO	POS TARG 4.01977, 0.213238	Pattern 1, Exps 2-2 in Visit 05 (1)	12 Secs (24 Secs)	
									[==>(Pattern 1)]	[1]
									[==>(Pattern 2)]	
	3	Satellite long1	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.93039, 0.197157	Pattern 1, Exps 3-3 in Visit 05 (1)	170 Secs (340 Secs)	
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
4	Satellite long2	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.87621, 0.277764	Pattern 1, Exps 4-4 in Visit 05 (1)	170 Secs (340 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
5	Satellite long3	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.96520, 0.294044	Pattern 1, Exps 5-5 in Visit 05 (1)	170 Secs (340 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
6	Satellite long4	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 4.01977, 0.213238	Pattern 1, Exps 6-6 in Visit 05 (1)	170 Secs (340 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
7	Satellite medium	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.93039, 0.197157	Pattern 1, Exps 7-7 in Visit 05 (1)	30 Secs (60 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		



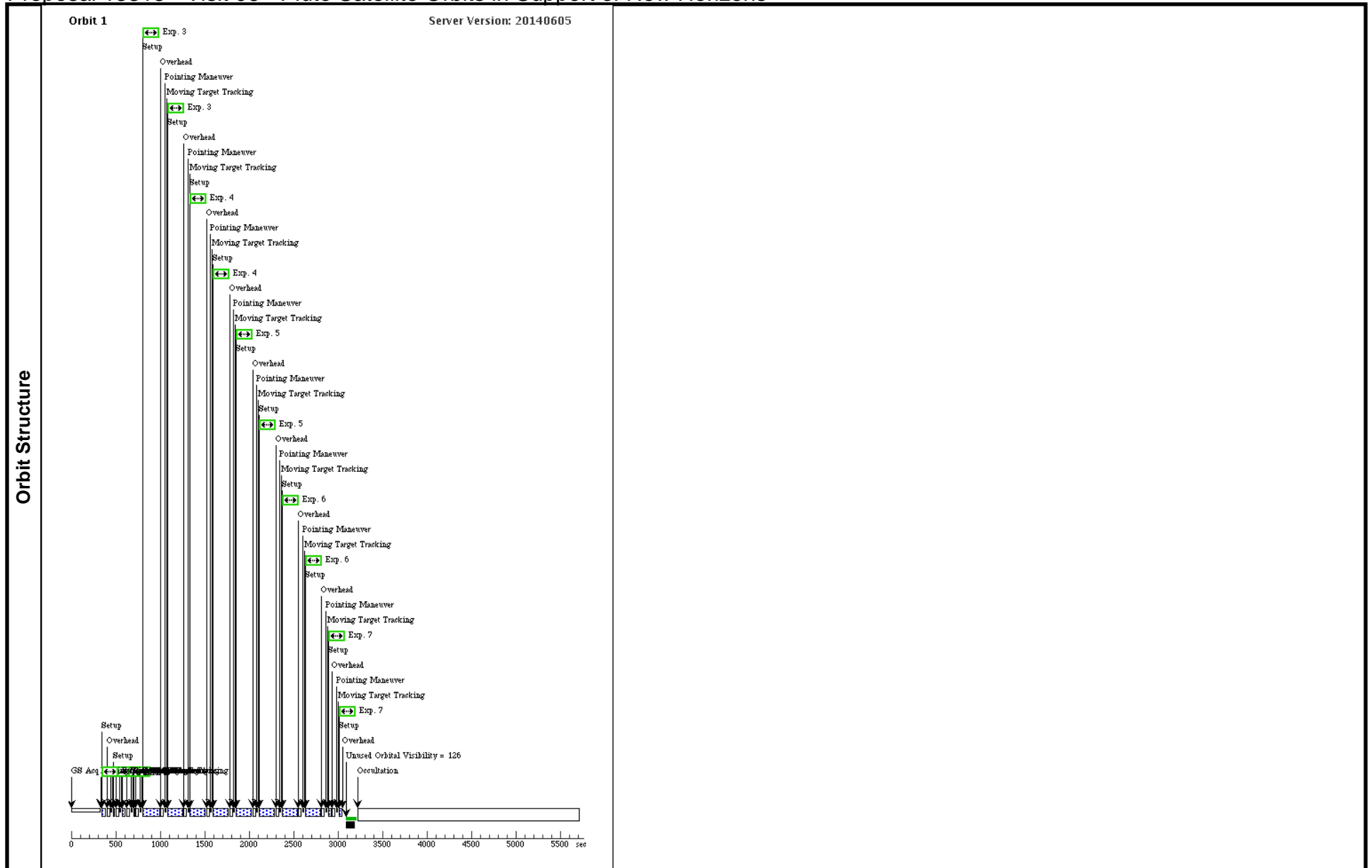
Proposal 13315 - Visit 06 - Pluto Satellite Orbits in Support of New Horizons

Tue Jul 22 01:01:09 GMT 2014

Visit	<p>Proposal 13315, Visit 06, completed</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: WFC3/UVIS</p> <p>Special Requirements: PCS MODE FINE; ORIENT 256.8D TO 256.8 D; BETWEEN 15-JUN-2014:08:44:28 AND 15-JUN-2014:20:44:28</p> <p><i>Comments: The set of visits provided is a linked set of observations to provide a very specific observational cadence of the Pluto system. It is specially chosen to optimize the coverage of the system given the five major periods (Charon, Nix, P4, Hydra, and P5 orbital periods). All visits are given individual specific scheduling window to maintain this cadence and the windows provided are 12 hours long (+/- 6 hours from nominal) to make the program more easily schedulable. The actual length of this window may not be critical (though we'd rather not extend it much longer than this without considerable thought). The visits are sorted by time but are pseudo-random in sub-earth longitude on each body. Once the visits have been scheduled, we need to check for contamination by bright stars (rare) and to make sure the faint satellites do not fall on diffraction spikes from Pluto or Charon. If they do, we will provide a small off-nominal roll to eliminate the problem. This is the same procedure we used for our Cycle 20 observations.</i></p>						
	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), (5), (6), (7)	
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
	(1)	PLUTO-SYSTEM	STD=PLUTO				EARTH

Proposal 13315 - Visit 06 - Pluto Satellite Orbits in Support of New Horizons

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Pluto Blue	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F438W	CR-SPLIT=NO	POS TARG 3.96520, 0.294044	Pattern 1, Exps 1-1 in Visit 06 (1)	12 Secs (24 Secs)	
									[==>(Pattern 1)]	[1]
									[==>(Pattern 2)]	
	2	Pluto Green	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F555W	CR-SPLIT=NO	POS TARG 4.01977, 0.213238	Pattern 1, Exps 2-2 in Visit 06 (1)	12 Secs (24 Secs)	
									[==>(Pattern 1)]	[1]
									[==>(Pattern 2)]	
	3	Satellite long1	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.93039, 0.197157	Pattern 1, Exps 3-3 in Visit 06 (1)	170 Secs (340 Secs)	
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
4	Satellite long2	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.87621, 0.277764	Pattern 1, Exps 4-4 in Visit 06 (1)	170 Secs (340 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
5	Satellite long3	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.96520, 0.294044	Pattern 1, Exps 5-5 in Visit 06 (1)	170 Secs (340 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
6	Satellite long4	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 4.01977, 0.213238	Pattern 1, Exps 6-6 in Visit 06 (1)	170 Secs (340 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
7	Satellite medium	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.93039, 0.197157	Pattern 1, Exps 7-7 in Visit 06 (1)	30 Secs (60 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		



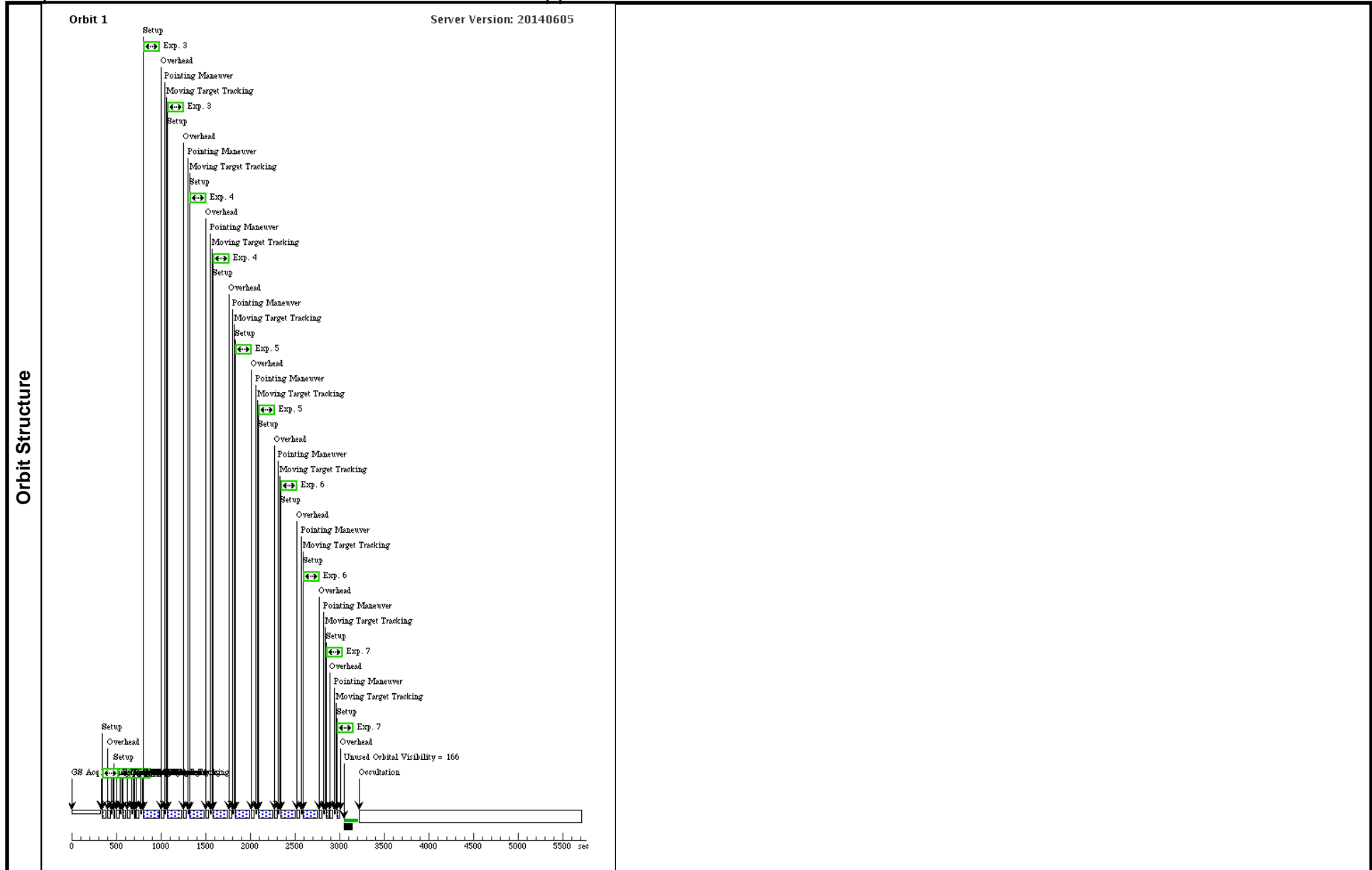
Proposal 13315 - Visit 07 - Pluto Satellite Orbits in Support of New Horizons

Tue Jul 22 01:01:09 GMT 2014

Visit	<p>Proposal 13315, Visit 07, completed</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: WFC3/UVIS</p> <p>Special Requirements: PCS MODE FINE; ORIENT 254.2D TO 254.2 D; BETWEEN 23-JUN-2014:21:07:53 AND 24-JUN-2014:09:07:53</p> <p><i>Comments: The set of visits provided is a linked set of observations to provide a very specific observational cadence of the Pluto system. It is specially chosen to optimize the coverage of the system given the five major periods (Charon, Nix, P4, Hydra, and P5 orbital periods). All visits are given individual specific scheduling window to maintain this cadence and the windows provided are 12 hours long (+/- 6 hours from nominal) to make the program more easily schedulable. The actual length of this window may not be critical (though we'd rather not extend it much longer than this without considerable thought). The visits are sorted by time but are pseudo-random in sub-earth longitude on each body. Once the visits have been scheduled, we need to check for contamination by bright stars (rare) and to make sure the faint satellites do not fall on diffraction spikes from Pluto or Charon. If they do, we will provide a small off-nominal roll to eliminate the problem. This is the same procedure we used for our Cycle 20 observations.</i></p>						
	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), (5), (6), (7)			
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
	(1)	PLUTO-SYSTEM	STD=PLUTO				EARTH

Proposal 13315 - Visit 07 - Pluto Satellite Orbits in Support of New Horizons

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Pluto Blue	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F438W	CR-SPLIT=NO	POS TARG 3.96520, 0.294044	Pattern 1, Exps 1-1 in Visit 07 (1)	12 Secs (24 Secs)	
									[==>(Pattern 1)]	[1]
									[==>(Pattern 2)]	
	2	Pluto Green	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F555W	CR-SPLIT=NO	POS TARG 4.01977, 0.213238	Pattern 1, Exps 2-2 in Visit 07 (1)	12 Secs (24 Secs)	
									[==>(Pattern 1)]	[1]
									[==>(Pattern 2)]	
	3	Satellite long1	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.93039, 0.197157	Pattern 1, Exps 3-3 in Visit 07 (1)	165 Secs (330 Secs)	
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
4	Satellite long2	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.87621, 0.277764	Pattern 1, Exps 4-4 in Visit 07 (1)	165 Secs (330 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
5	Satellite long3	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.96520, 0.294044	Pattern 1, Exps 5-5 in Visit 07 (1)	165 Secs (330 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
6	Satellite long4	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 4.01977, 0.213238	Pattern 1, Exps 6-6 in Visit 07 (1)	165 Secs (330 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
7	Satellite medium	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.93039, 0.197157	Pattern 1, Exps 7-7 in Visit 07 (1)	30 Secs (60 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		



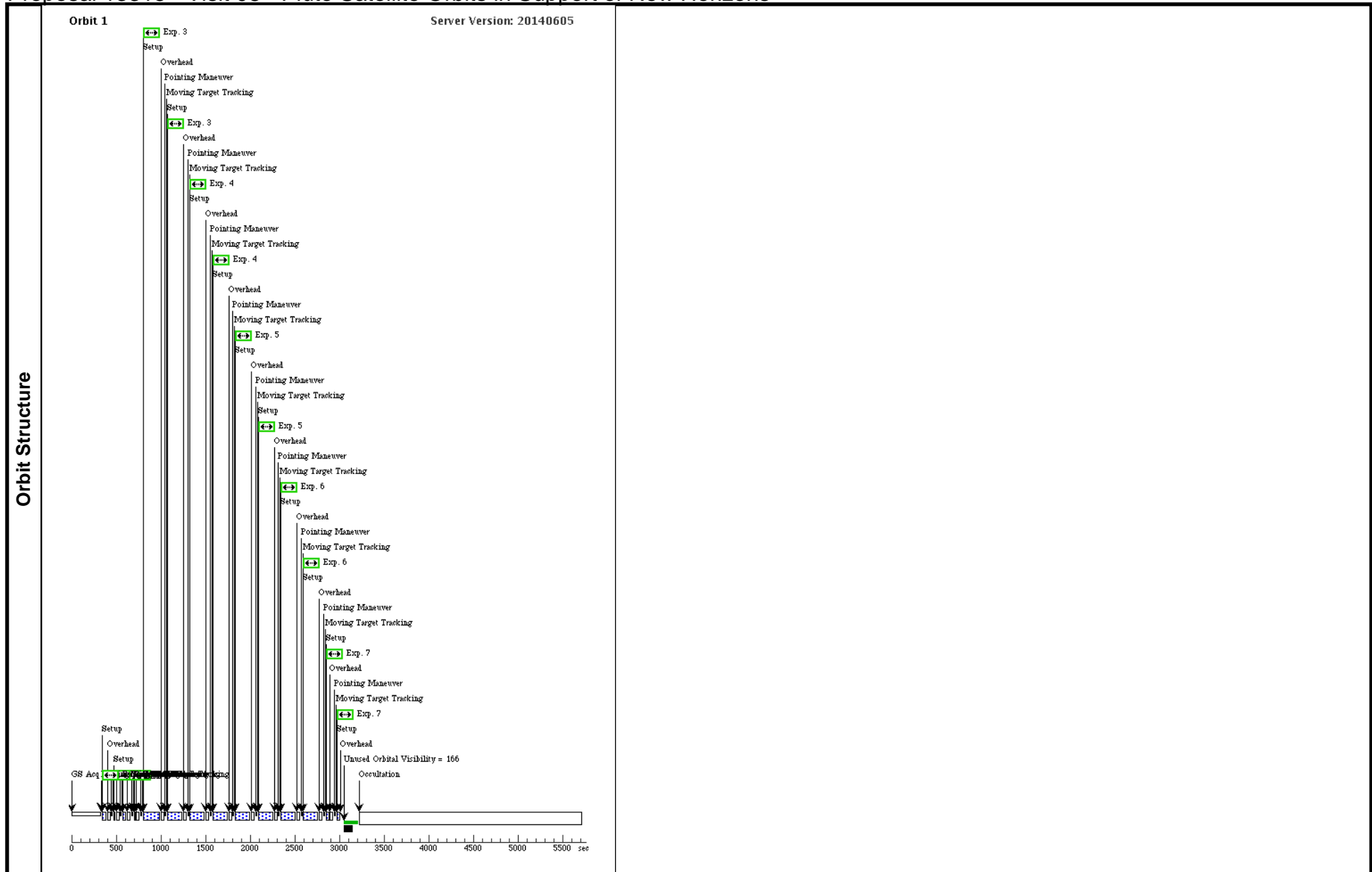
Proposal 13315 - Visit 08 - Pluto Satellite Orbits in Support of New Horizons

Tue Jul 22 01:01:09 GMT 2014

Visit	<p>Proposal 13315, Visit 08, completed</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: WFC3/UVIS</p> <p>Special Requirements: PCS MODE FINE; ORIENT 128.9D TO 128.9 D; BETWEEN 07-JUL-2014:04:29:31 AND 07-JUL-2014:16:29:31</p> <p><i>Comments: The set of visits provided is a linked set of observations to provide a very specific observational cadence of the Pluto system. It is specially chosen to optimize the coverage of the system given the five major periods (Charon, Nix, P4, Hydra, and P5 orbital periods). All visits are given individual specific scheduling window to maintain this cadence and the windows provided are 12 hours long (+/- 6 hours from nominal) to make the program more easily schedulable. The actual length of this window may not be critical (though we'd rather not extend it much longer than this without considerable thought). The visits are sorted by time but are pseudo-random in sub-earth longitude on each body. Once the visits have been scheduled, we need to check for contamination by bright stars (rare) and to make sure the faint satellites do not fall on diffraction spikes from Pluto or Charon. If they do, we will provide a small off-nominal roll to eliminate the problem. This is the same procedure we used for our Cycle 20 observations.</i></p>						
	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), (5), (6), (7)			
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
	(1)	PLUTO-SYSTEM	STD=PLUTO				EARTH

Proposal 13315 - Visit 08 - Pluto Satellite Orbits in Support of New Horizons

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Pluto Blue	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F438W	CR-SPLIT=NO	POS TARG 3.96520, 0.294044	Pattern 1, Exps 1-1 in Visit 08 (1)	12 Secs (24 Secs)	
									[==>(Pattern 1)]	[1]
									[==>(Pattern 2)]	
	2	Pluto Green	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F555W	CR-SPLIT=NO	POS TARG 4.01977, 0.213238	Pattern 1, Exps 2-2 in Visit 08 (1)	12 Secs (24 Secs)	
									[==>(Pattern 1)]	[1]
									[==>(Pattern 2)]	
	3	Satellite long1	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.93039, 0.197157	Pattern 1, Exps 3-3 in Visit 08 (1)	165 Secs (330 Secs)	
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
4	Satellite long2	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.87621, 0.277764	Pattern 1, Exps 4-4 in Visit 08 (1)	165 Secs (330 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
5	Satellite long3	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.96520, 0.294044	Pattern 1, Exps 5-5 in Visit 08 (1)	165 Secs (330 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
6	Satellite long4	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 4.01977, 0.213238	Pattern 1, Exps 6-6 in Visit 08 (1)	165 Secs (330 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
7	Satellite medium	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.93039, 0.197157	Pattern 1, Exps 7-7 in Visit 08 (1)	30 Secs (60 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		



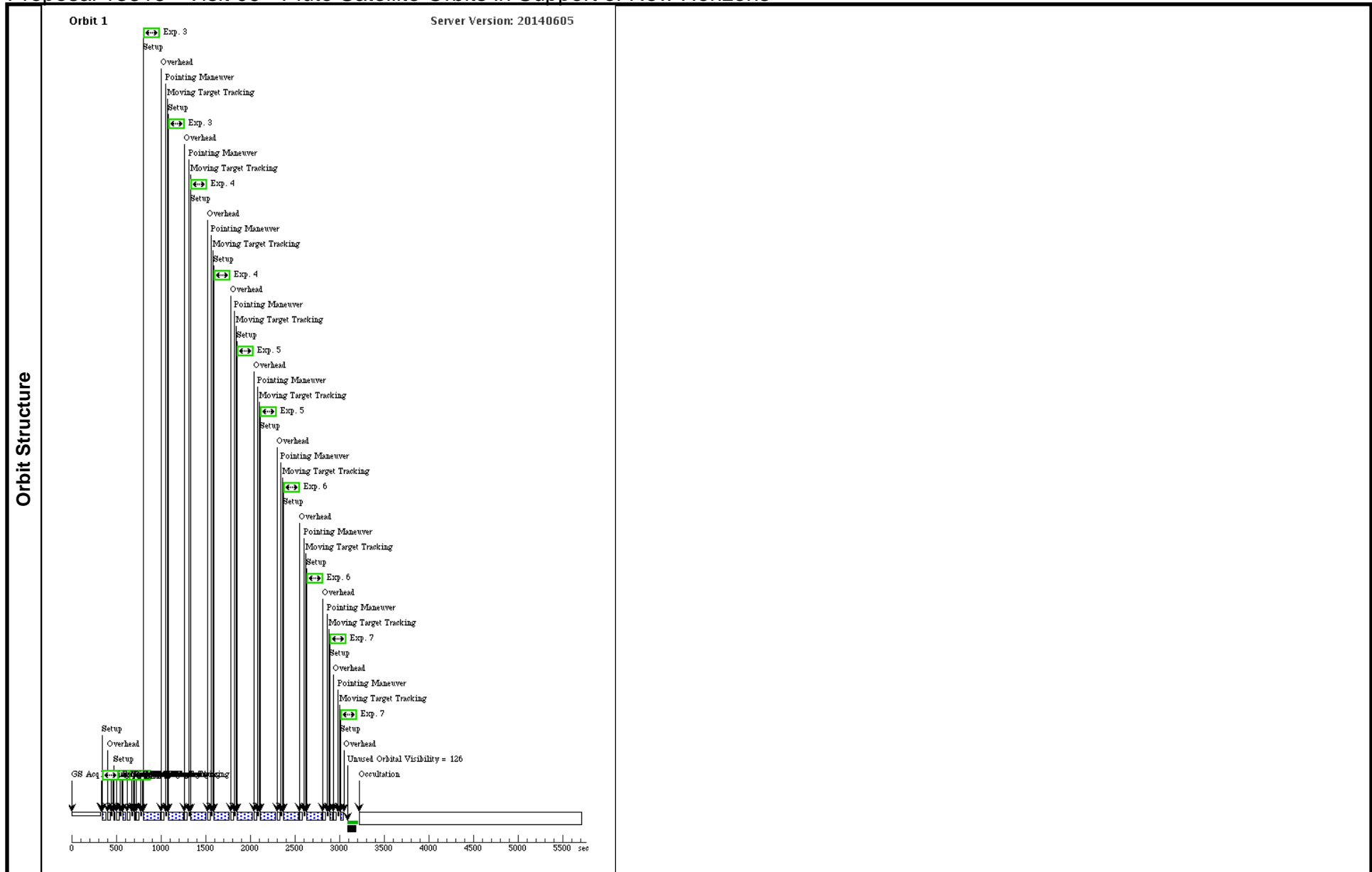
Proposal 13315 - Visit 09 - Pluto Satellite Orbits in Support of New Horizons

Tue Jul 22 01:01:10 GMT 2014

Visit	<p>Proposal 13315, Visit 09, completed</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: WFC3/UVIS</p> <p>Special Requirements: PCS MODE FINE; ORIENT 110.4D TO 110.4 D; BETWEEN 14-JUL-2014:15:20:01 AND 15-JUL-2014:03:20:01</p> <p><i>Comments: The set of visits provided is a linked set of observations to provide a very specific observational cadence of the Pluto system. It is specially chosen to optimize the coverage of the system given the five major periods (Charon, Nix, P4, Hydra, and P5 orbital periods). All visits are given individual specific scheduling window to maintain this cadence and the windows provided are 12 hours long (+/- 6 hours from nominal) to make the program more easily schedulable. The actual length of this window may not be critical (though we'd rather not extend it much longer than this without considerable thought). The visits are sorted by time but are pseudo-random in sub-earth longitude on each body. Once the visits have been scheduled, we need to check for contamination by bright stars (rare) and to make sure the faint satellites do not fall on diffraction spikes from Pluto or Charon. If they do, we will provide a small off-nominal roll to eliminate the problem. This is the same procedure we used for our Cycle 20 observations.</i></p>						
	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), (5), (6), (7)			
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
	(1)	PLUTO-SYSTEM	STD=PLUTO				EARTH

Proposal 13315 - Visit 09 - Pluto Satellite Orbits in Support of New Horizons

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Pluto Blue	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F438W	CR-SPLIT=NO	POS TARG 3.96520, 0.294044	Pattern 1, Exps 1-1 in Visit 09 (1)	12 Secs (24 Secs)	
									[==>(Pattern 1)]	[1]
									[==>(Pattern 2)]	
	2	Pluto Green	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F555W	CR-SPLIT=NO	POS TARG 4.01977, 0.213238	Pattern 1, Exps 2-2 in Visit 09 (1)	12 Secs (24 Secs)	
									[==>(Pattern 1)]	[1]
									[==>(Pattern 2)]	
	3	Satellite long1	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.93039, 0.197157	Pattern 1, Exps 3-3 in Visit 09 (1)	170 Secs (340 Secs)	
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
4	Satellite long2	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.87621, 0.277764	Pattern 1, Exps 4-4 in Visit 09 (1)	170 Secs (340 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
5	Satellite long3	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.96520, 0.294044	Pattern 1, Exps 5-5 in Visit 09 (1)	170 Secs (340 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
6	Satellite long4	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 4.01977, 0.213238	Pattern 1, Exps 6-6 in Visit 09 (1)	170 Secs (340 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
7	Satellite medium	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.93039, 0.197157	Pattern 1, Exps 7-7 in Visit 09 (1)	30 Secs (60 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		



Proposal 13315 - Visit 10 - Pluto Satellite Orbits in Support of New Horizons

Tue Jul 22 01:01:10 GMT 2014

Visit	Proposal 13315, Visit 10, scheduled Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: PCS MODE FINE; ORIENT 87.7D TO 87.7 D; BETWEEN 29-JUL-2014:13:01:02 AND 30-JUL-2014:01:01:02 <i>Comments: The set of visits provided is a linked set of observations to provide a very specific observational cadence of the Pluto system. It is specially chosen to optimize the coverage of the system given the five major periods (Charon, Nix, P4, Hydra, and P5 orbital periods). All visits are given individual specific scheduling window to maintain this cadence and the windows provided are 12 hours long (+/- 6 hours from nominal) to make the program more easily schedulable. The actual length of this window may not be critical (though we'd rather not extend it much longer than this without considerable thought). The visits are sorted by time but are pseudo-random in sub-earth longitude on each body. Once the visits have been scheduled, we need to check for contamination by bright stars (rare) and to make sure the faint satellites do not fall on diffraction spikes from Pluto or Charon. If they do, we will provide a small off-nominal roll to eliminate the problem. This is the same procedure we used for our Cycle 20 observations.</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), (5), (6), (7)			
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
	(1)	PLUTO-SYSTEM	STD=PLUTO				EARTH

Proposal 13315 - Visit 10 - Pluto Satellite Orbits in Support of New Horizons

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Pluto Blue	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F438W	CR-SPLIT=NO	POS TARG 3.96520, 0.294044	Pattern 1, Exps 1-1 in Visit 10 (1)	12 Secs (24 Secs)	
									[==>(Pattern 1)]	[1]
									[==>(Pattern 2)]	
	2	Pluto Green	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F555W	CR-SPLIT=NO	POS TARG 4.01977, 0.213238	Pattern 1, Exps 2-2 in Visit 10 (1)	12 Secs (24 Secs)	
									[==>(Pattern 1)]	[1]
									[==>(Pattern 2)]	
	3	Satellite long1	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.93039, 0.197157	Pattern 1, Exps 3-3 in Visit 10 (1)	170 Secs (340 Secs)	
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
4	Satellite long2	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.87621, 0.277764	Pattern 1, Exps 4-4 in Visit 10 (1)	170 Secs (340 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
5	Satellite long3	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.96520, 0.294044	Pattern 1, Exps 5-5 in Visit 10 (1)	170 Secs (340 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
6	Satellite long4	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 4.01977, 0.213238	Pattern 1, Exps 6-6 in Visit 10 (1)	170 Secs (340 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
7	Satellite medium	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.93039, 0.197157	Pattern 1, Exps 7-7 in Visit 10 (1)	30 Secs (60 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		

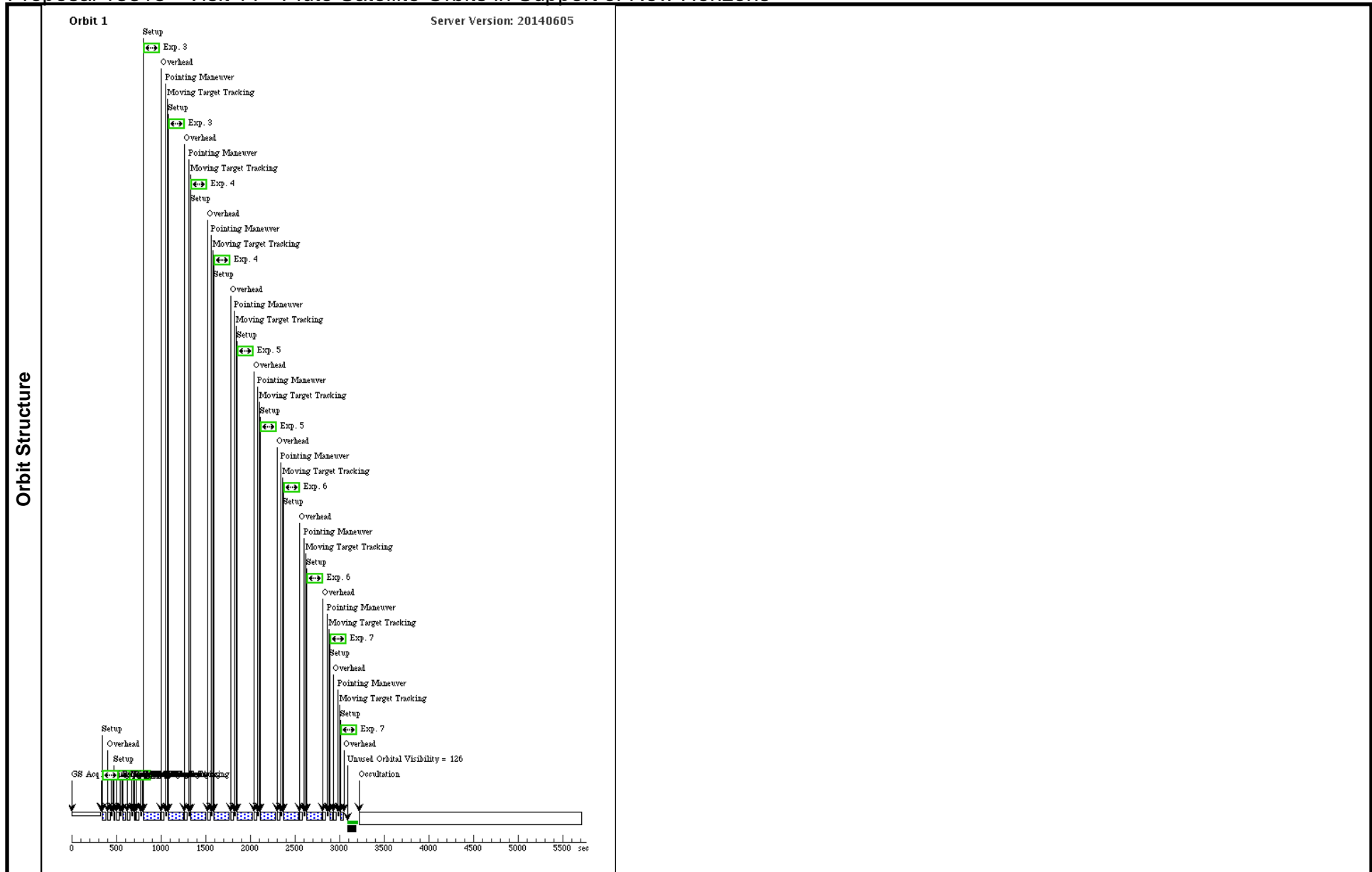
Proposal 13315 - Visit 11 - Pluto Satellite Orbits in Support of New Horizons

Tue Jul 22 01:01:10 GMT 2014

Visit	<p>Proposal 13315, Visit 11, scheduled</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: WFC3/UVIS</p> <p>Special Requirements: PCS MODE FINE; ORIENT 89.8D TO 89.8 D; BETWEEN 02-AUG-2014:06:26:17 AND 02-AUG-2014:18:26:17</p> <p><i>Comments: The set of visits provided is a linked set of observations to provide a very specific observational cadence of the Pluto system. It is specially chosen to optimize the coverage of the system given the five major periods (Charon, Nix, P4, Hydra, and P5 orbital periods). All visits are given individual specific scheduling window to maintain this cadence and the windows provided are 12 hours long (+/- 6 hours from nominal) to make the program more easily schedulable. The actual length of this window may not be critical (though we'd rather not extend it much longer than this without considerable thought). The visits are sorted by time but are pseudo-random in sub-earth longitude on each body. Once the visits have been scheduled, we need to check for contamination by bright stars (rare) and to make sure the faint satellites do not fall on diffraction spikes from Pluto or Charon. If they do, we will provide a small off-nominal roll to eliminate the problem. This is the same procedure we used for our Cycle 20 observations.</i></p>						
	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), (5), (6), (7)	
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
	(1)	PLUTO-SYSTEM	STD=PLUTO				EARTH

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Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Pluto Blue	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F438W	CR-SPLIT=NO	POS TARG 3.96520, 0.294044	Pattern 1, Exps 1-1 in Visit 11 (1)	12 Secs (24 Secs)	
									[==>(Pattern 1)]	[1]
									[==>(Pattern 2)]	
	2	Pluto Green	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F555W	CR-SPLIT=NO	POS TARG 4.01977, 0.213238	Pattern 1, Exps 2-2 in Visit 11 (1)	12 Secs (24 Secs)	
									[==>(Pattern 1)]	[1]
									[==>(Pattern 2)]	
	3	Satellite long1	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.93039, 0.197157	Pattern 1, Exps 3-3 in Visit 11 (1)	170 Secs (340 Secs)	
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
4	Satellite long2	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.87621, 0.277764	Pattern 1, Exps 4-4 in Visit 11 (1)	170 Secs (340 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
5	Satellite long3	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.96520, 0.294044	Pattern 1, Exps 5-5 in Visit 11 (1)	170 Secs (340 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
6	Satellite long4	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 4.01977, 0.213238	Pattern 1, Exps 6-6 in Visit 11 (1)	170 Secs (340 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
7	Satellite medium	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.93039, 0.197157	Pattern 1, Exps 7-7 in Visit 11 (1)	30 Secs (60 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		



Proposal 13315 - Visit 12 - Pluto Satellite Orbits in Support of New Horizons

Tue Jul 22 01:01:10 GMT 2014

Visit	Proposal 13315, Visit 12, scheduling Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: PCS MODE FINE; ORIENT 72.3D TO 72.3 D; BETWEEN 10-AUG-2014:18:10:00 AND 11-AUG-2014:06:49:43 Comments: <i>The set of visits provided is a linked set of observations to provide a very specific observational cadence of the Pluto system. It is specially chosen to optimize the coverage of the system given the five major periods (Charon, Nix, P4, Hydra, and P5 orbital periods). All visits are given individual specific scheduling window to maintain this cadence and the windows provided are 12 hours long (+/- 6 hours from nominal) to make the program more easily schedulable. The actual length of this window may not be critical (though we'd rather not extend it much longer than this without considerable thought). The visits are sorted by time but are pseudo-random in sub-earth longitude on each body. Once the visits have been scheduled, we need to check for contamination by bright stars (rare) and to make sure the faint satellites do not fall on diffraction spikes from Pluto or Charon. If they do, we will provide a small off-nominal roll to eliminate the problem. This is the same procedure we used for our Cycle 20 observations.</i>														
	Patterns	<table border="1"> <thead> <tr> <th>#</th> <th>Primary Pattern</th> <th>Secondary Pattern</th> <th>Exposures</th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td> Pattern Type=WFC3-UVIS-DITHER- LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing= </td> <td> Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false </td> <td>(1), (2), (3), (4), (5), (6), (7)</td> </tr> </tbody> </table>	#	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), (5), (6), (7)					
#	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), (5), (6), (7)												
Solar System Targets	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Level 1</th> <th>Level 2</th> <th>Level 3</th> <th>Window</th> <th>Ephem Center</th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td>PLUTO-SYSTEM</td> <td>STD=PLUTO</td> <td></td> <td></td> <td></td> <td>EARTH</td> </tr> </tbody> </table>	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center	(1)	PLUTO-SYSTEM	STD=PLUTO				EARTH
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center									
(1)	PLUTO-SYSTEM	STD=PLUTO				EARTH									

Proposal 13315 - Visit 12 - Pluto Satellite Orbits in Support of New Horizons

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Pluto Blue	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F438W	CR-SPLIT=NO	POS TARG 3.96520, 0.294044	Pattern 1, Exps 1-1 in Visit 12 (1)	12 Secs (24 Secs)	
									[==>(Pattern 1)]	[1]
									[==>(Pattern 2)]	
	2	Pluto Green	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F555W	CR-SPLIT=NO	POS TARG 4.01977, 0.213238	Pattern 1, Exps 2-2 in Visit 12 (1)	12 Secs (24 Secs)	
									[==>(Pattern 1)]	[1]
									[==>(Pattern 2)]	
	3	Satellite long1	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.93039, 0.197157	Pattern 1, Exps 3-3 in Visit 12 (1)	175 Secs (350 Secs)	
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
4	Satellite long2	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.87621, 0.277764	Pattern 1, Exps 4-4 in Visit 12 (1)	175 Secs (350 Secs)		
								[==>(Pattern 1)]	[1]	
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5	Satellite long3	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.96520, 0.294044	Pattern 1, Exps 5-5 in Visit 12 (1)	175 Secs (350 Secs)		
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7	Satellite medium	(1) PLUTO-SYSTEM	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F350LP	CR-SPLIT=NO	POS TARG 3.93039, 0.197157	Pattern 1, Exps 7-7 in Visit 12 (1)	30 Secs (60 Secs)		
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		

