



11169 - Collisions in the Kuiper belt

Cycle: 16, 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	(7) 1999TD10	WFPC2	1	18-Jan-2008 01:47:44.0	yes
02	(8) 2002VE95	WFPC2	1	18-Jan-2008 01:47:49.0	yes
03	(4) QUAOAR	WFPC2	1	18-Jan-2008 01:47:51.0	yes
04	(4) QUAOAR	WFPC2	1	18-Jan-2008 01:47:54.0	yes
05	(4) QUAOAR	WFPC2	1	18-Jan-2008 01:47:57.0	yes
06	(4) QUAOAR	WFPC2	1	18-Jan-2008 01:47:59.0	yes
19	(4) QUAOAR	WFPC2	1	18-Jan-2008 01:48:02.0	yes
07	(4) QUAOAR	NIC1	1	18-Jan-2008 01:48:06.0	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>
08	(6) 2003AZ84	WFPC2	1	18-Jan-2008 01:48:10.0	yes
09	(6) 2003AZ84	WFPC2	1	18-Jan-2008 01:48:12.0	yes
10	(6) 2003AZ84	WFPC2	1	18-Jan-2008 01:48:15.0	yes
11	(6) 2003AZ84	WFPC2	1	18-Jan-2008 01:48:17.0	yes
20	(6) 2003AZ84	WFPC2	1	18-Jan-2008 01:48:20.0	yes
12	(6) 2003AZ84	NIC1	1	18-Jan-2008 01:48:24.0	yes
13	(1) ERIS	WFPC2	1	18-Jan-2008 01:48:27.0	yes
14	(5) ORCUS	WFPC2	1	18-Jan-2008 01:48:29.0	yes
15	(3) 2003EL61	WFPC2	1	18-Jan-2008 01:48:32.0	yes
16	(1) ERIS	NIC2	1	18-Jan-2008 01:48:35.0	yes
17	(3) 2003EL61	NIC1	1	18-Jan-2008 01:48:43.0	yes
18	(5) ORCUS	NIC1	1	18-Jan-2008 01:48:48.0	yes

20 Total Orbits Used

ABSTRACT

For most of the 15 year history of observations of Kuiper belt objects, it has been speculated that impacts must have played a major role in shaping the physical and chemical characteristics of these objects, yet little direct evidence of the effects of such impacts has been seen. The past 18 months, however, have seen an explosion of major new discoveries giving some of the first insights into the influence of this critical process. From a diversity of observations we have been led to the hypotheses that: (1) satellite-forming impacts must have been common in the Kuiper belt; (2) such impacts led to significant chemical modification; and (3) the outcomes of these impacts are sufficiently predictable that we can now find and study these impact-derived systems by the chemical and physical attributes of both the satellites and the primaries. If our picture is correct, we now have in hand for the first time a set of incredibly powerful tools to study the frequency and outcome of collisions in the outer solar system. Here we propose three linked projects that would answer questions critical to the multiple prongs of our hypothesis. In these projects we will study the chemical effects of

collisions through spectrophotometric observations of collisionally formed satellites and through the search for additional satellites around primaries with potential impact signatures, and we will study the physical effects of impacts through the examination of tidal evolution in proposed impact systems. The intensive HST program that we propose here will allow us to fully test our new hypotheses and will provide the ability to obtain the first extensive insights into outer solar system impact processes.

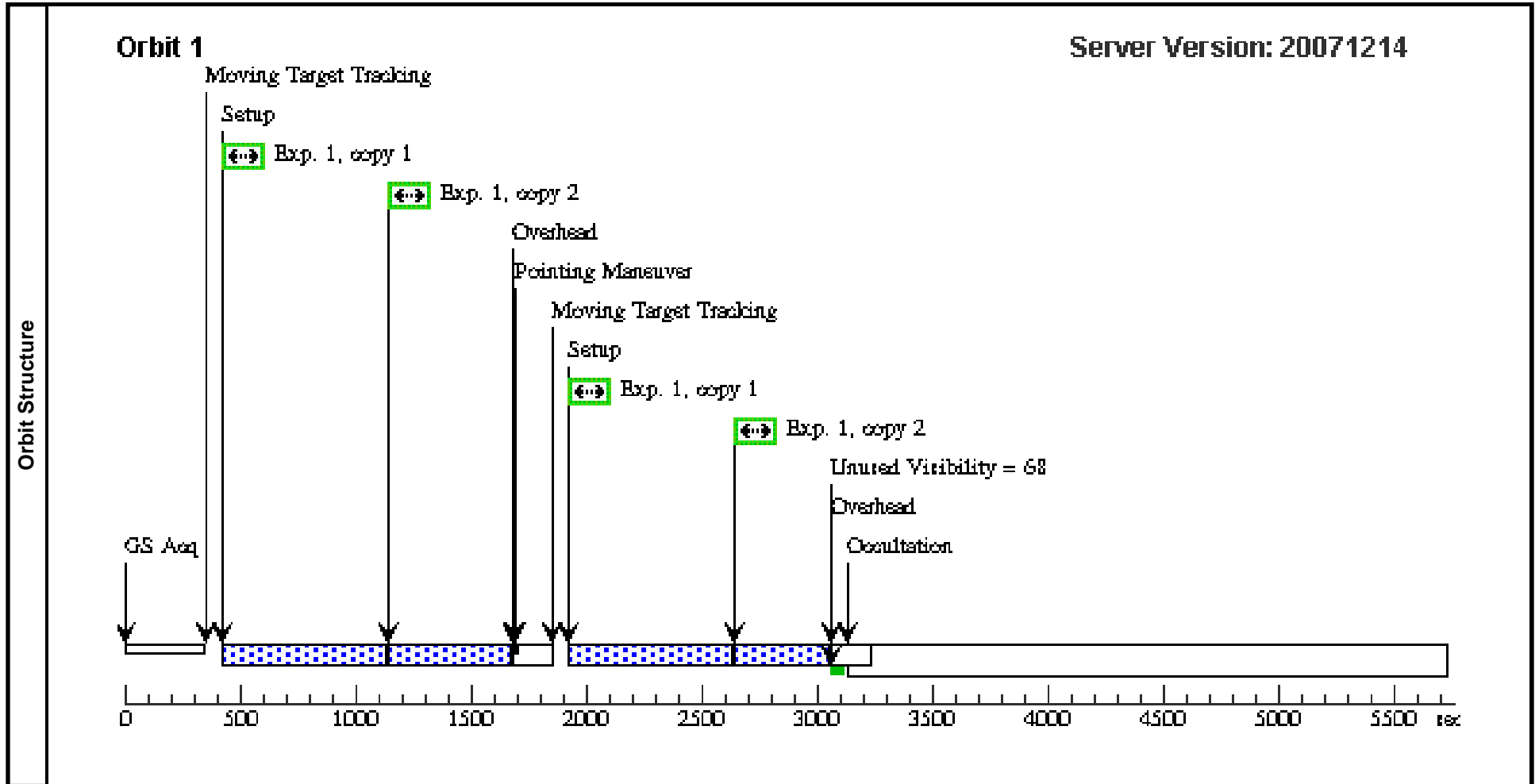
OBSERVING DESCRIPTION

This proposal is designed to perform visible and near-infrared photometry and astrometry on faint satellites of Kuiper belt objects.

Proposal 11169 - Visit 01 - Collisions in the Kuiper belt

Fri Jan 18 06:48:52 GMT 2008

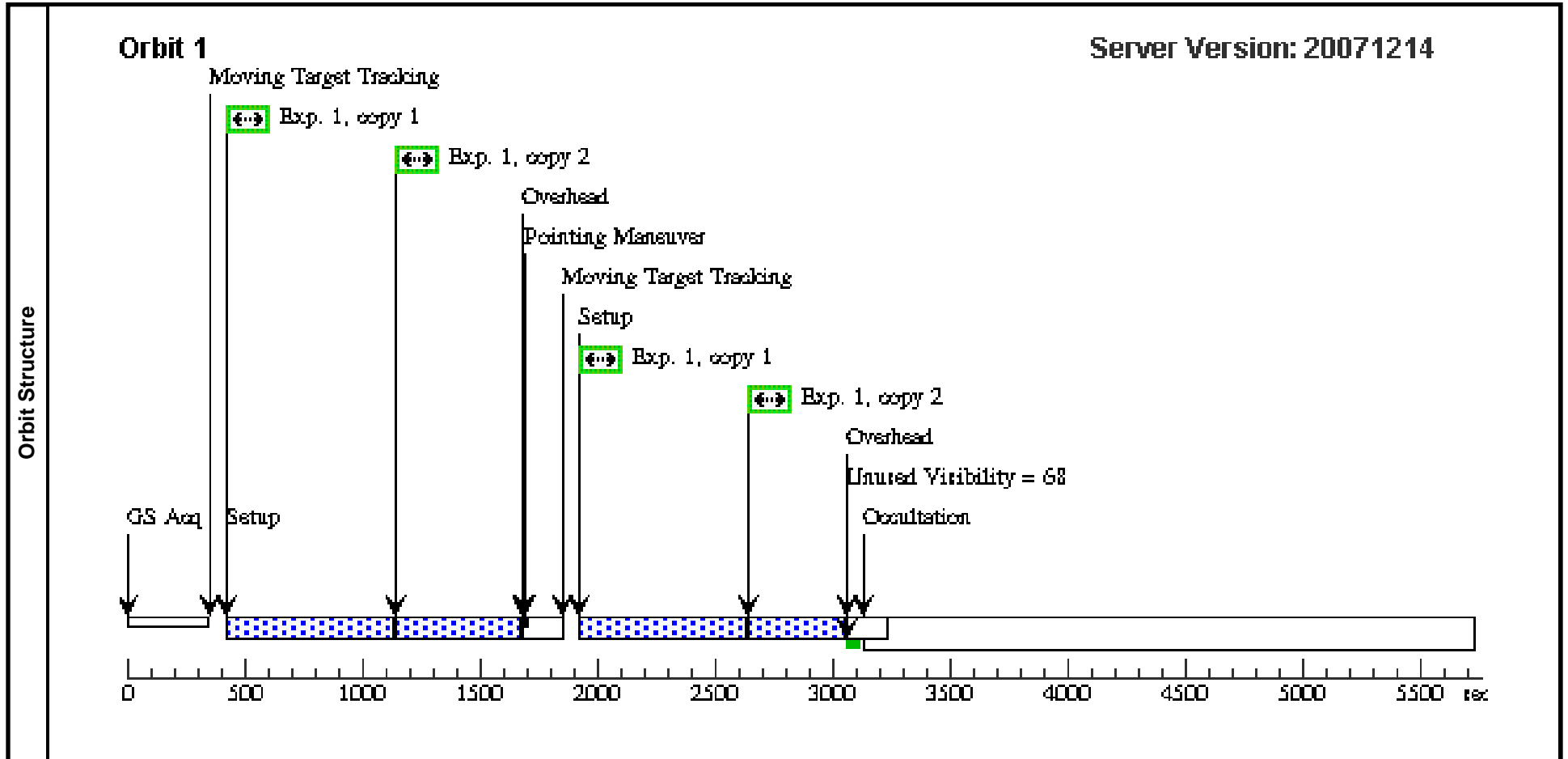
Visit	Proposal 11169, Visit 01, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: (none) <i>Comments: Satellite search for 1999 TD10</i>										
	Patterns	#	Primary Pattern				Secondary Pattern				Exposures
(1)		Pattern Type=WFPC2-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.3535 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=45.0 Angle Between Sides= Center Pattern=false							(1)	
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center				
	(7)	1999TD10	TYPE=ASTEROID,A=95.3474747594 825,E=0.8712963603085,I=5.9626543 6417667,O=184.6946795269919,W=1 72.4138198991721,M=2.88451453854 934,EQUINOX=J2000,EPOCH=10- APR-2007:00:00:00					EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1	(7) 1999TD10	WFPC2, IMAGE, PC1	F606W	POS TARG -7.0,-8.0	Pattern 1-1 (1)	180.0 Secs X 2 [=>500.0 Secs (Pattern 1, Copy 1)] [=>500.0 Secs (Pattern 1, Copy 2)] [=>500.0 Secs (Pattern 2, Copy 1)] [=>400.0 Secs (Pattern 2, Copy 2)]	[1]			



Proposal 11169 - Visit 02 - Collisions in the Kuiper belt

Fri Jan 18 06:48:54 GMT 2008

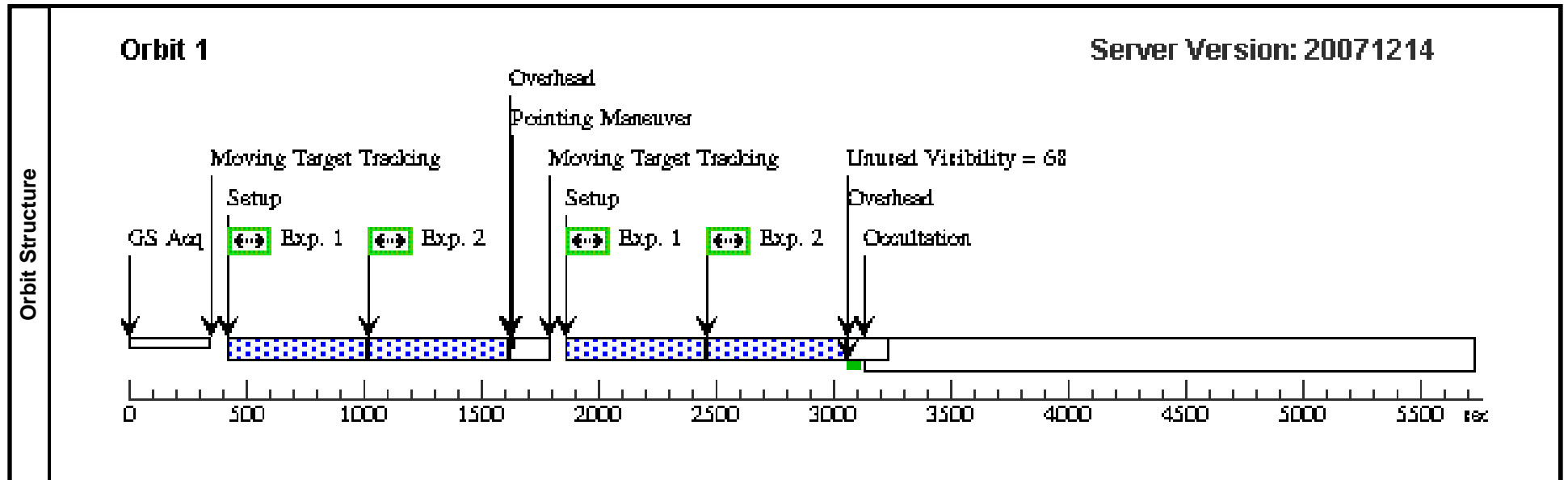
Visit	Proposal 11169, Visit 02, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: (none) <i>Comments: Satellite search for 2002 VE95</i>										
	Patterns	#	Primary Pattern				Secondary Pattern				Exposures
(1)		Pattern Type=WFPC2-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.3535 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=45.0 Angle Between Sides= Center Pattern=false							(1)	
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center				
	(8)	2002VE95	TYPE=ASTEROID,A=39.131721,E=0 .2852445,I=16.34587,O=199.85507,W =206.77492,M=8.23614,EQUINOX=J 2000,EPOCH=10-APR-2007:00:00:00					EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1	(8) 2002VE95	WFPC2, IMAGE, PC1	F606W	POS TARG -7.0,-8.0	Pattern 1-1 (1)	160.0 Secs X 2 [=>500.0 Secs (Pattern 1, Copy 1)] [=>500.0 Secs (Pattern 1, Copy 2)] [=>500.0 Secs (Pattern 2, Copy 1)] [=>400.0 Secs (Pattern 2, Copy 2)]	[1]			



Proposal 11169 - Visit 03 - Collisions in the Kuiper belt

Fri Jan 18 06:48:54 GMT 2008

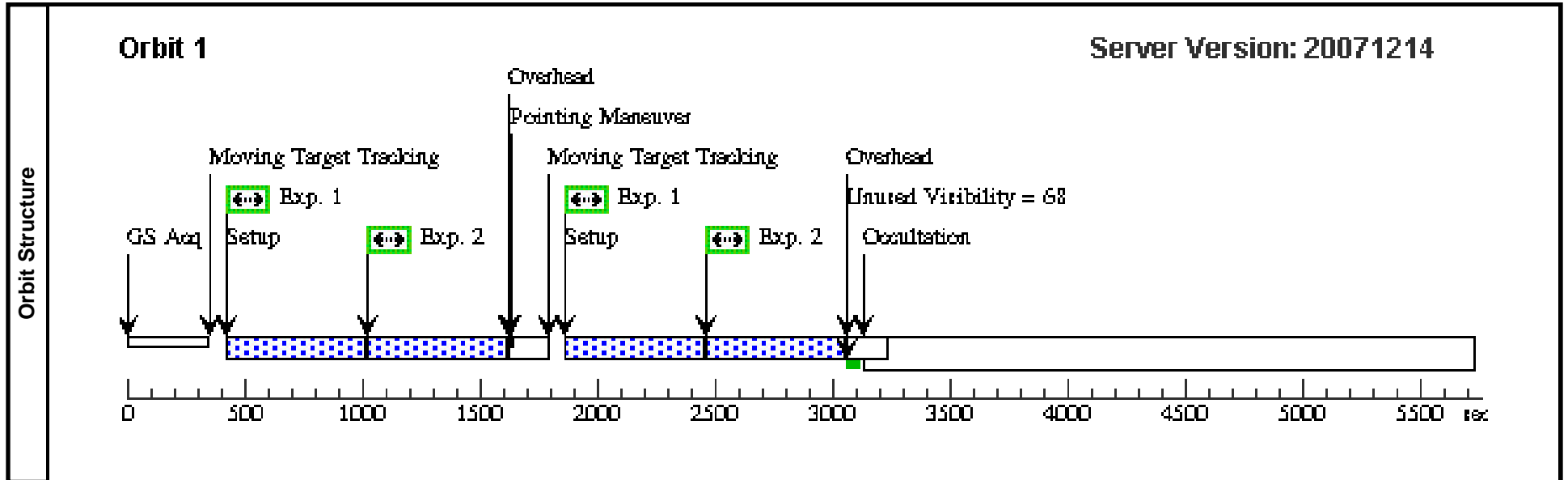
Visit	Proposal 11169, Visit 03, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: (none) Comments: <i>Quaoar 1 of 5</i>										
	Patterns	#	Primary Pattern				Secondary Pattern				Exposures
(1)		Pattern Type=WFPC2-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.3535 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=45.0 Angle Between Sides= Center Pattern=false					(1-2)			
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center				
	(4)	QUAOAR	TYPE=ASTEROID,A=43.6115279653 718,E=0.03702564572882,I=7.985003 74496711,O=188.8225272197804,W= 147.8657994136374,M=284.03024728 43412,EQUINOX=J2000,EPOCH=10- APR-2007:00:00:00					EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1	(4) QUAOAR	WFPC2, IMAGE, PC1	F606W		POS TARG -7.0,-8.0	Pattern 1-2 (1)	400.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]		
2	(4) QUAOAR	WFPC2, IMAGE, PC1	F814W		POS TARG -7.0,-8.0	Pattern 1-2 (1)	500.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]			



Proposal 11169 - Visit 04 - Collisions in the Kuiper belt

Fri Jan 18 06:48:54 GMT 2008

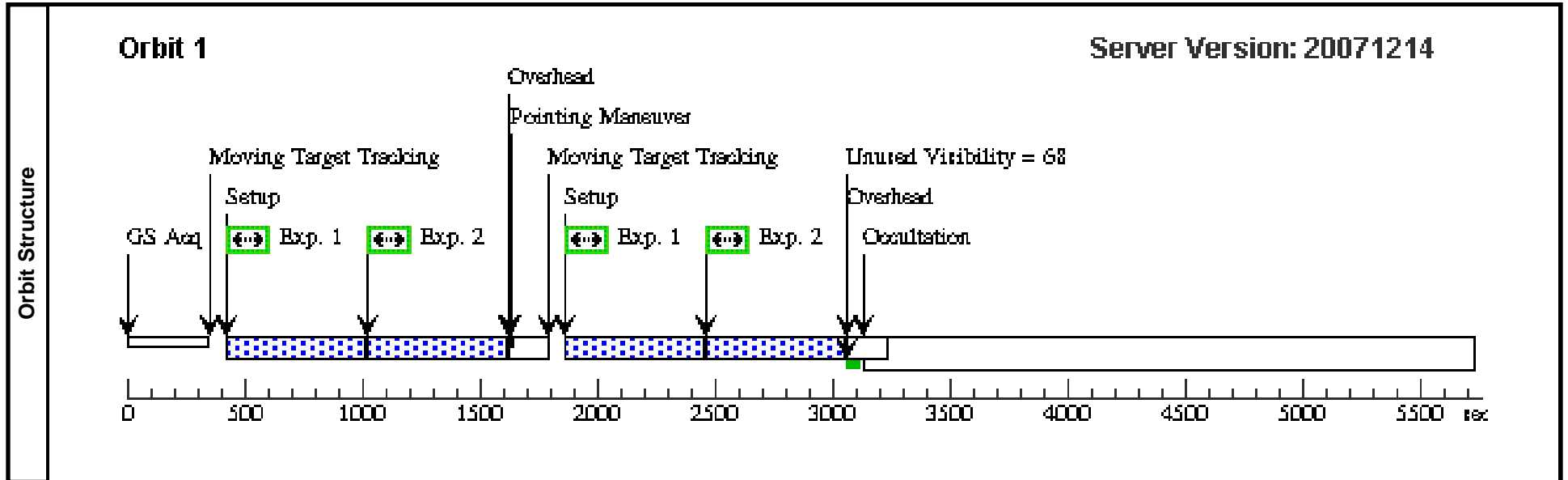
Visit	Proposal 11169, Visit 04, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: AFTER 03 BY 4.0 D TO 6.0 D Comments: Quaoar 2 of 5										
	Patterns	#	Primary Pattern				Secondary Pattern				Exposures
(1)		Pattern Type=WFPC2-LINE	Coordinate Frame=POS-TARG							(1-2)	
		Purpose=DITHER	Pattern Orientation=45.0								
		Number Of Points=2	Angle Between Sides=								
		Point Spacing=0.3535	Center Pattern=false								
		Line Spacing=									
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center				
	(4)	QUAOAR	TYPE=ASTEROID,A=43.6115279653 718,E=0.03702564572882,I=7.985003 74496711,O=188.8225272197804,W= 147.8657994136374,M=284.03024728 43412,EQUINOX=J2000,EPOCH=10- APR-2007:00:00:00					EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1	(4) QUAOAR	WFPC2, IMAGE, PC1	F606W		POS TARG -7.0,-8.0	Pattern 1-2 (1)	400.0 Secs			
								[==>(Pattern 1)]		[1]	
								[==>(Pattern 2)]			
2	(4) QUAOAR	WFPC2, IMAGE, PC1	F814W		POS TARG -7.0,-8.0	Pattern 1-2 (1)	500.0 Secs				
							[==>(Pattern 1)]		[1]		
							[==>(Pattern 2)]				



Proposal 11169 - Visit 05 - Collisions in the Kuiper belt

Fri Jan 18 06:48:54 GMT 2008

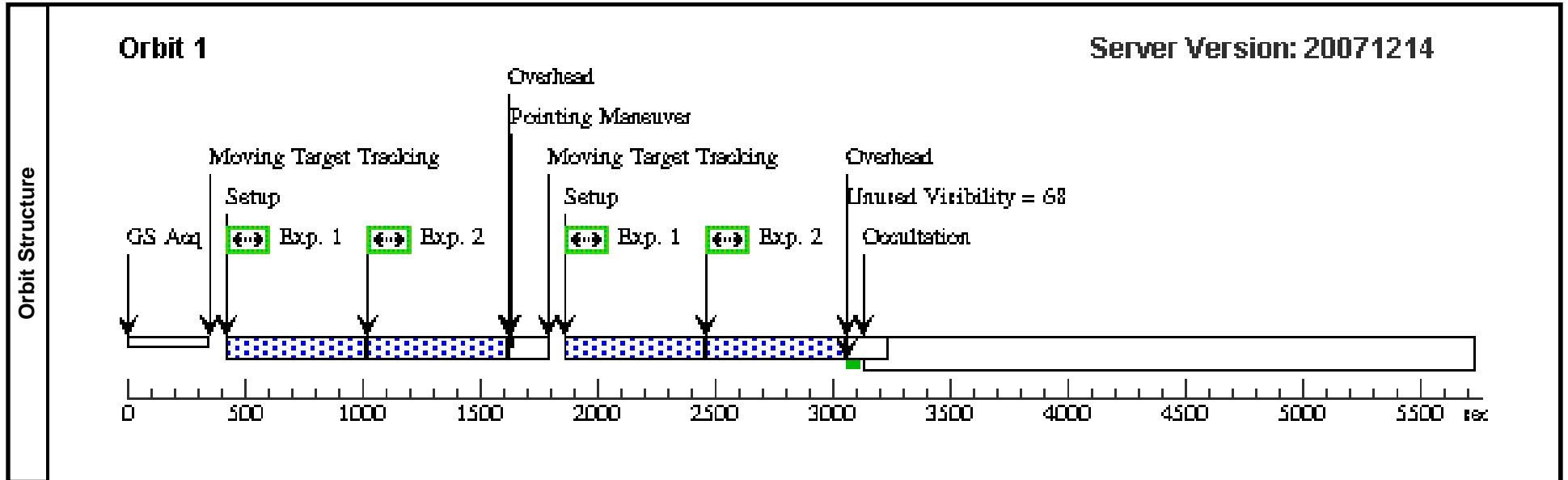
Visit	Proposal 11169, Visit 05, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: AFTER 03 BY 9.0 D TO 11.0 D Comments: Quaoar 3 of 5										
	Patterns	#	Primary Pattern				Secondary Pattern				Exposures
(1)		Pattern Type=WFPC2-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.3535 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=45.0 Angle Between Sides= Center Pattern=false					(1-2)			
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center				
	(4)	QUAOAR	TYPE=ASTEROID,A=43.6115279653 718,E=0.03702564572882,I=7.985003 74496711,O=188.8225272197804,W= 147.8657994136374,M=284.03024728 43412,EQUINOX=J2000,EPOCH=10- APR-2007:00:00:00					EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1	(4) QUAOAR	WFPC2, IMAGE, PC1	F606W		POS TARG -7.0,-8.0	Pattern 1-2 (1)	400.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]		
2	(4) QUAOAR	WFPC2, IMAGE, PC1	F814W		POS TARG -7.0,-8.0	Pattern 1-2 (1)	500.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]			



Proposal 11169 - Visit 06 - Collisions in the Kuiper belt

Fri Jan 18 06:48:55 GMT 2008

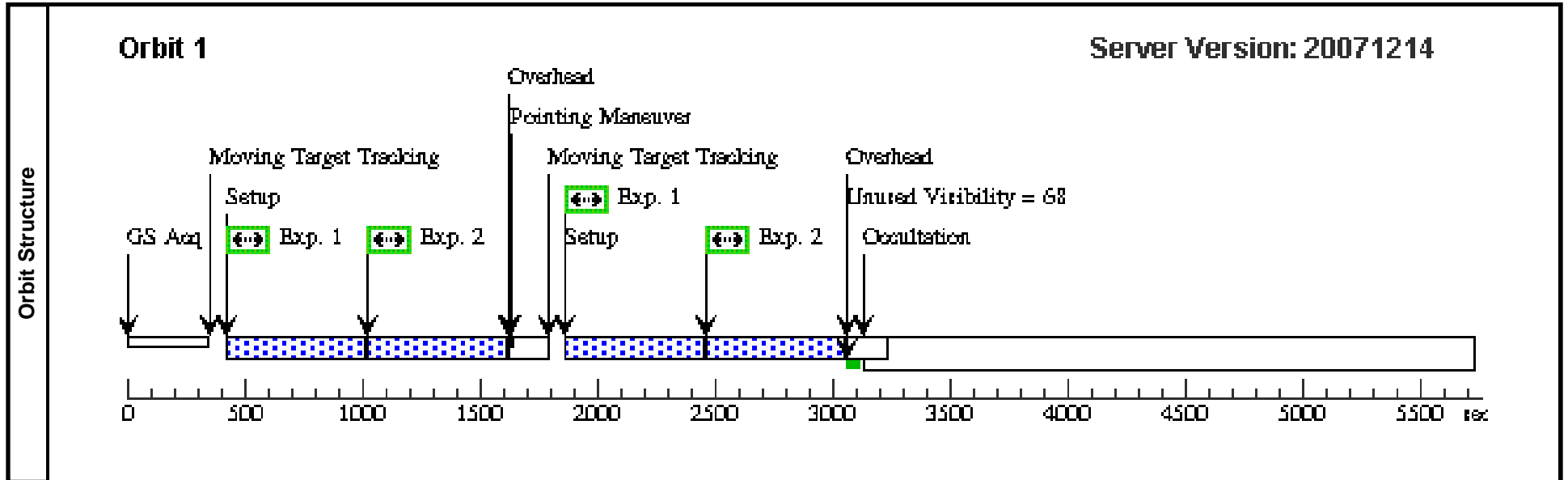
Visit	Proposal 11169, Visit 06, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: AFTER 03 BY 14.0 D TO 16.0 D Comments: Quaoar 4 of 5										
	Patterns	#	Primary Pattern				Secondary Pattern				Exposures
(1)		Pattern Type=WFPC2-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.3535 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=45.0 Angle Between Sides= Center Pattern=false							(1-2)	
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center				
	(4)	QUAOAR	TYPE=ASTEROID,A=43.6115279653 718,E=0.03702564572882,I=7.985003 74496711,O=188.8225272197804,W= 147.8657994136374,M=284.03024728 43412,EQUINOX=J2000,EPOCH=10- APR-2007:00:00:00					EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1	(4) QUAOAR	WFPC2, IMAGE, PC1	F606W		POS TARG -7.0,-8.0	Pattern 1-2 (1)	400.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]			[1]
2	(4) QUAOAR	WFPC2, IMAGE, PC1	F814W		POS TARG -7.0,-8.0	Pattern 1-2 (1)	500.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]			[1]	



Proposal 11169 - Visit 19 - Collisions in the Kuiper belt

Fri Jan 18 06:48:55 GMT 2008

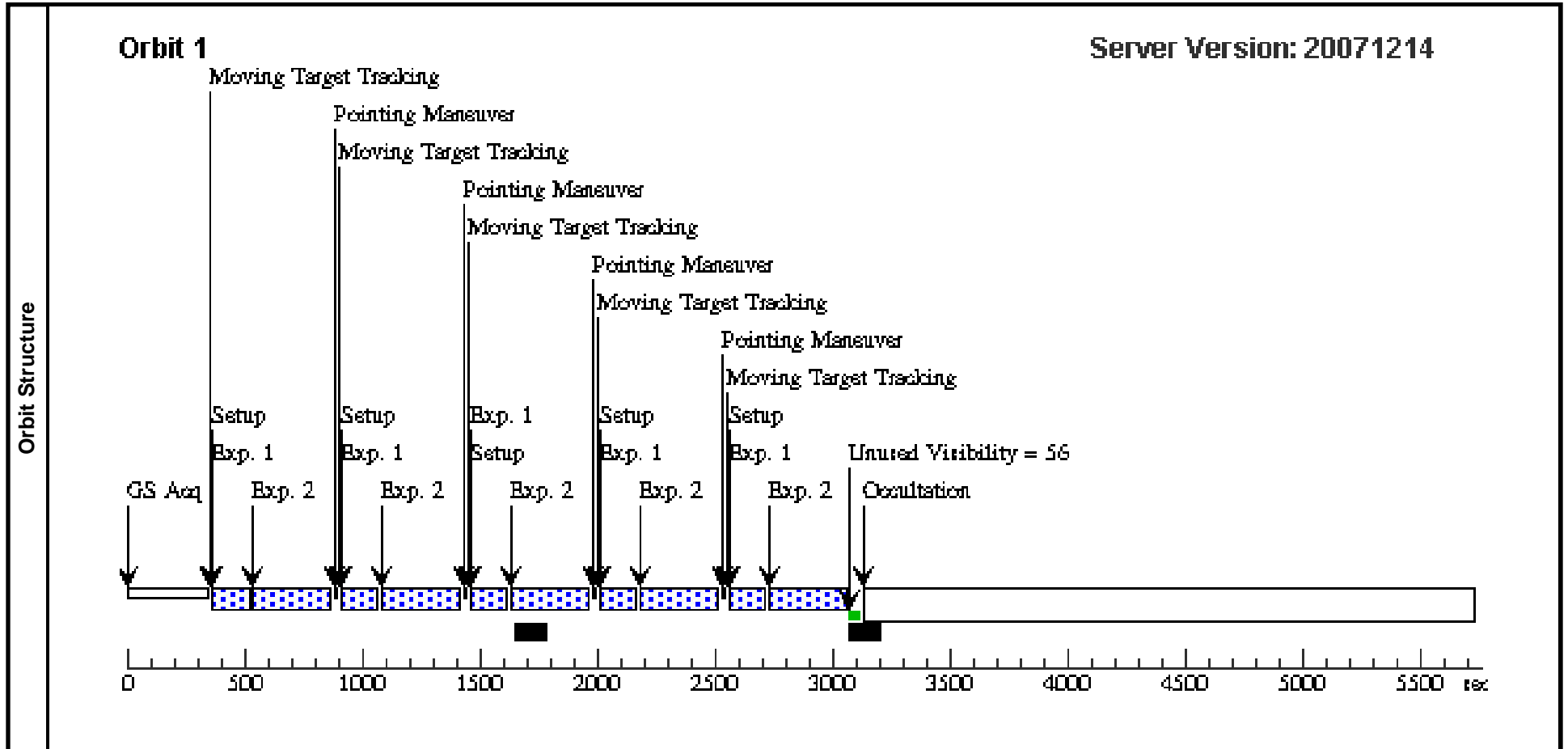
Visit	Proposal 11169, Visit 19, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: AFTER 03 BY 19.0 D TO 21.0 D Comments: Quaoar 5 of 5										
	Patterns	#	Primary Pattern				Secondary Pattern				Exposures
(1)		Pattern Type=WFPC2-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.3535 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=45.0 Angle Between Sides= Center Pattern=false					(1-2)			
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center				
	(4)	QUAOAR	TYPE=ASTEROID,A=43.6115279653 718,E=0.03702564572882,I=7.985003 74496711,O=188.8225272197804,W= 147.8657994136374,M=284.03024728 43412,EQUINOX=J2000,EPOCH=10- APR-2007:00:00:00					EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1	(4) QUAOAR	WFPC2, IMAGE, PC1	F606W		POS TARG -7.0,-8.0	Pattern 1-2 (1)	400.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]		
2	(4) QUAOAR	WFPC2, IMAGE, PC1	F814W		POS TARG -7.0,-8.0	Pattern 1-2 (1)	500.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]			



Proposal 11169 - Visit 07 - Collisions in the Kuiper belt

Fri Jan 18 06:48:55 GMT 2008

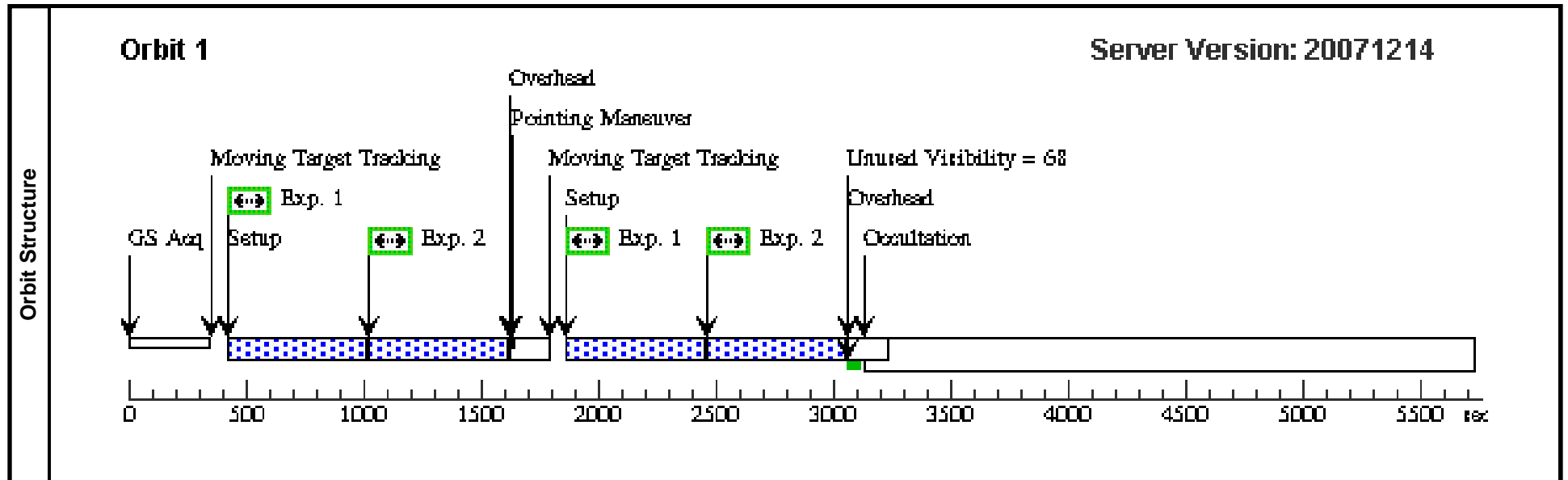
Visit	Proposal 11169, Visit 07, implementation Diagnostic Status: No Diagnostics Scientific Instruments: NIC1 Special Requirements: AFTER 03 BY 40.0 D TO 60.0 D Comments: Quaoar NICMOS										
	Patterns	#	Primary Pattern				Secondary Pattern				Exposures
(2)		Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG							(1-2)	
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center				
	(4)	QUAOAR	TYPE=ASTEROID,A=43.6115279653 718,E=0.03702564572882,I=7.985003 74496711,O=188.8225272197804,W= 147.8657994136374,M=284.03024728 43412,EQUINOX=J2000,EPOCH=10- APR-2007:00:00:00					EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1	(4) QUAOAR	NIC1, MULTIACCUM, NIC1	F110W	SAMP-SEQ=SPARS 16; NSAMP=11			Pattern 1-2 (2)	[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)] [=>(Pattern 5)]		[1]
2	(4) QUAOAR	NIC1, MULTIACCUM, NIC1	F160W	SAMP-SEQ=SPARS 16; NSAMP=22			Pattern 1-2 (2)	[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)] [=>(Pattern 5)]		[1]	



Proposal 11169 - Visit 08 - Collisions in the Kuiper belt

Fri Jan 18 06:48:56 GMT 2008

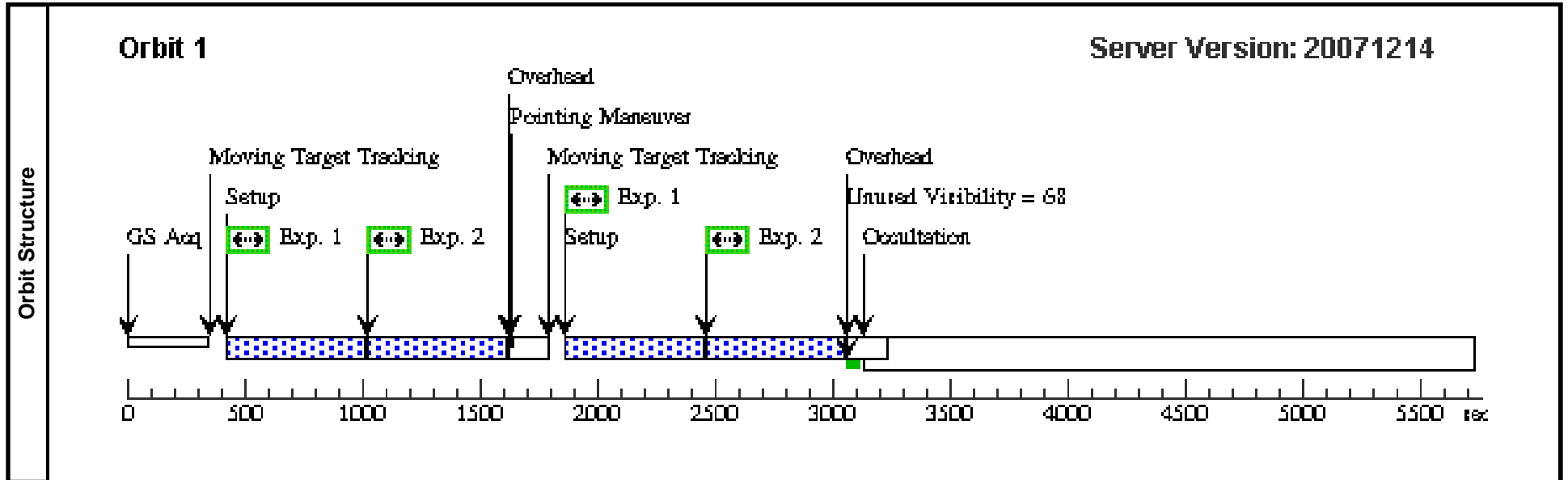
Visit	Proposal 11169, Visit 08, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: (none) Comments: AZ84 1 of 5									
	Patterns	#	Primary Pattern			Secondary Pattern			Exposures	
		(1)	Pattern Type=WFPC2-LINE	Coordinate Frame=POS-TARG						
		Purpose=DITHER	Pattern Orientation=45.0							
		Number Of Points=2	Angle Between Sides=							
		Point Spacing=0.3535	Center Pattern=false							
		Line Spacing=								
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center			
	(6)	2003AZ84	TYPE=ASTEROID,A=39.4134679811 142,E=0.18100034456736,I=13.59581 64872541,O=252.1429496589188,W= 15.03790665207049,M=215.20562040 70488,EQUINOX=J2000,EPOCH=10- APR-2007:00:00:00					EARTH		
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(6) 2003AZ84	WFPC2, IMAGE, PC1	F606W			POS TARG -7.0,-8.0	Pattern 1-2 (1)	400.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	2	(6) 2003AZ84	WFPC2, IMAGE, PC1	F814W			POS TARG -7.0,-8.0	Pattern 1-2 (1)	500.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]



Proposal 11169 - Visit 09 - Collisions in the Kuiper belt

Fri Jan 18 06:48:56 GMT 2008

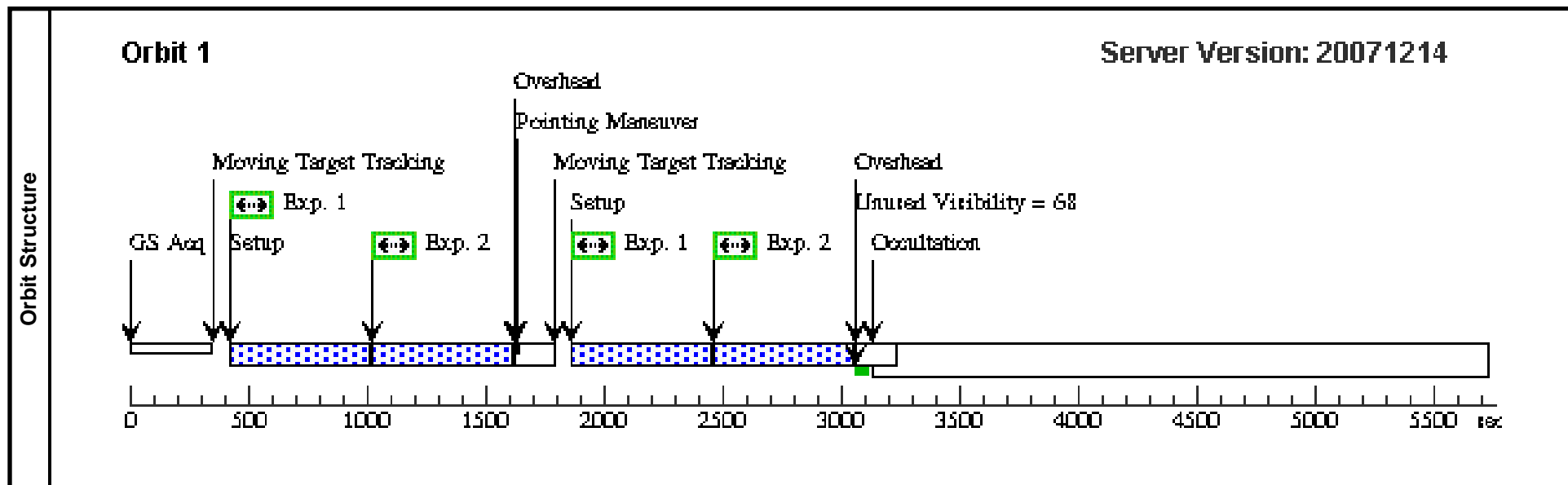
Visit	Proposal 11169, Visit 09, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: AFTER 08 BY 4.0 D TO 6.0 D Comments: AZ84 2 of 5										
	Patterns	#	Primary Pattern				Secondary Pattern				Exposures
(1)		Pattern Type=WFPC2-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.3535 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=45.0 Angle Between Sides= Center Pattern=false					(1-2)			
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center				
	(6)	2003AZ84	TYPE=ASTEROID,A=39.4134679811 142,E=0.18100034456736,I=13.59581 64872541,O=252.1429496589188,W= 15.03790665207049,M=215.20562040 70488,EQUINOX=J2000,EPOCH=10- APR-2007:00:00:00					EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1	(6) 2003AZ84	WFPC2, IMAGE, PC1	F606W		POS TARG -7.0,-8.0	Pattern 1-2 (1)	400.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]		
2	(6) 2003AZ84	WFPC2, IMAGE, PC1	F814W		POS TARG -7.0,-8.0	Pattern 1-2 (1)	500.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]			



Proposal 11169 - Visit 10 - Collisions in the Kuiper belt

Fri Jan 18 06:48:56 GMT 2008

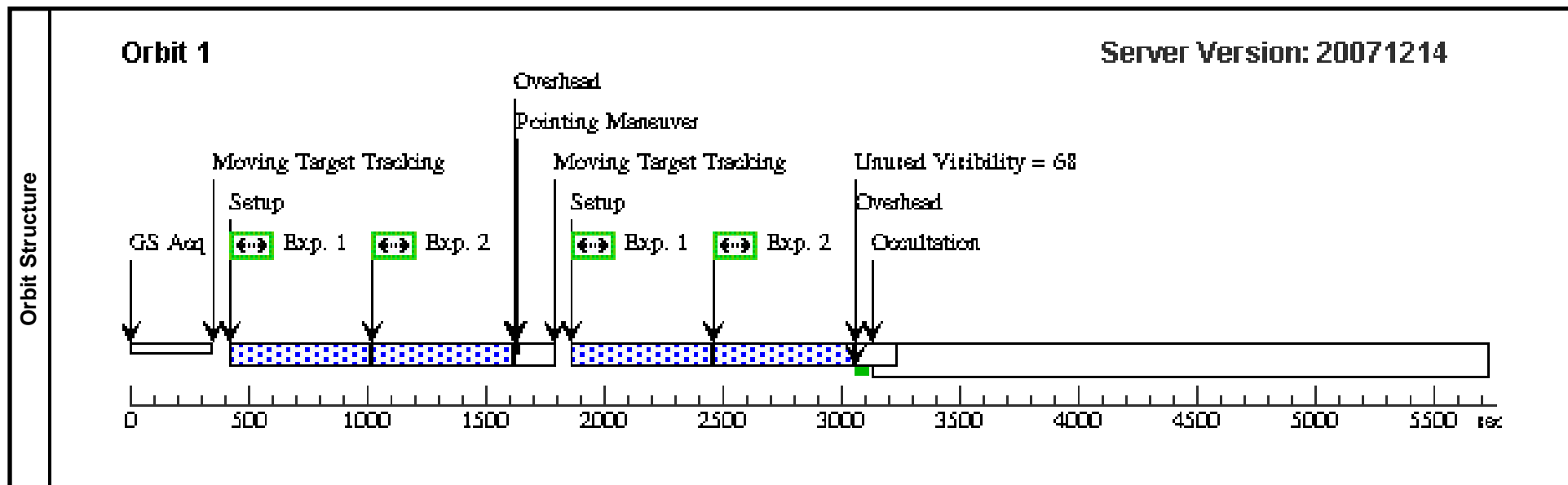
Visit	Proposal 11169, Visit 10, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: AFTER 08 BY 9.0 D TO 11.0 D Comments: AZ84 3 of 5									
	Patterns	#	Primary Pattern			Secondary Pattern			Exposures	
		(1)	Pattern Type=WFPC2-LINE	Coordinate Frame=POS-TARG						
		Purpose=DITHER	Pattern Orientation=45.0							
		Number Of Points=2	Angle Between Sides=							
		Point Spacing=0.3535	Center Pattern=false							
		Line Spacing=								
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center			
	(6)	2003AZ84	TYPE=ASTEROID,A=39.4134679811 142,E=0.18100034456736,I=13.59581 64872541,O=252.1429496589188,W= 15.03790665207049,M=215.20562040 70488,EQUINOX=J2000,EPOCH=10- APR-2007:00:00:00					EARTH		
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(6) 2003AZ84		WFPC2, IMAGE, PC1	F606W		POS TARG -7.0,-8.0	Pattern 1-2 (1)	400.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	2	(6) 2003AZ84		WFPC2, IMAGE, PC1	F814W		POS TARG -7.0,-8.0	Pattern 1-2 (1)	500.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]



Proposal 11169 - Visit 11 - Collisions in the Kuiper belt

Fri Jan 18 06:48:57 GMT 2008

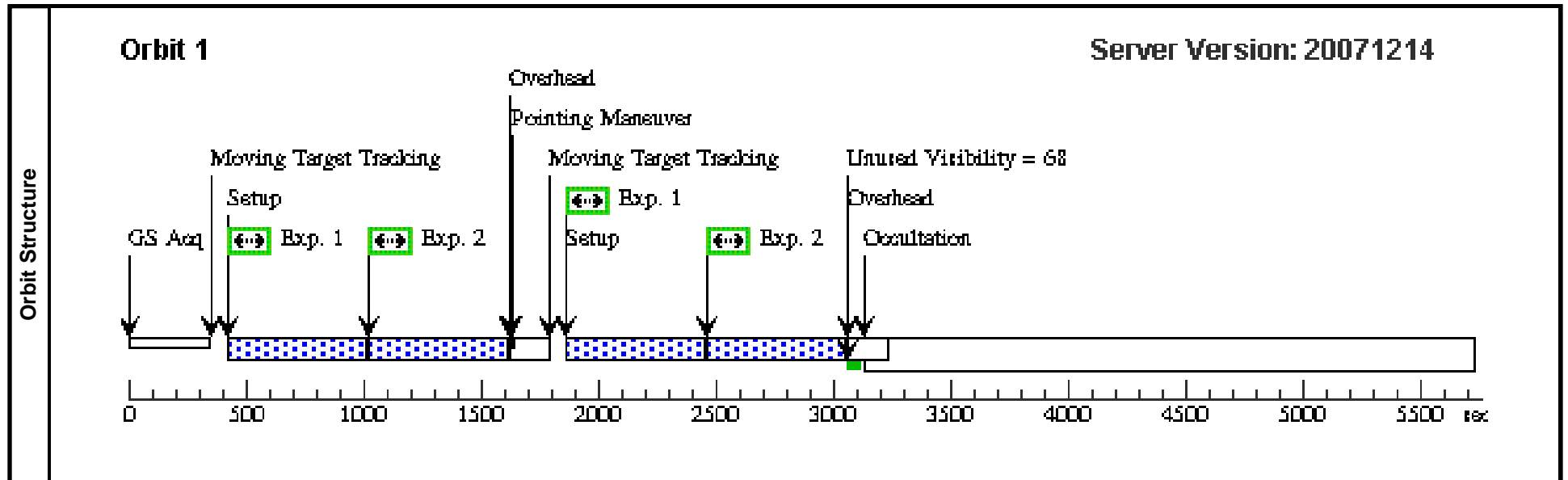
Visit	Proposal 11169, Visit 11, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: AFTER 08 BY 14.0 D TO 16.0 D Comments: AZ84 4 of 5										
	Patterns	#	Primary Pattern				Secondary Pattern				Exposures
(1)		Pattern Type=WFPC2-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.3535 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=45.0 Angle Between Sides= Center Pattern=false							(1-2)	
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center				
	(6)	2003AZ84	TYPE=ASTEROID,A=39.4134679811 142,E=0.18100034456736,I=13.59581 64872541,O=252.1429496589188,W= 15.03790665207049,M=215.20562040 70488,EQUINOX=J2000,EPOCH=10- APR-2007:00:00:00					EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1	(6) 2003AZ84	WFPC2, IMAGE, PC1	F606W		POS TARG -7.0,-8.0	Pattern 1-2 (1)	400.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]		
2	(6) 2003AZ84	WFPC2, IMAGE, PC1	F814W		POS TARG -7.0,-8.0	Pattern 1-2 (1)	500.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]			



Proposal 11169 - Visit 20 - Collisions in the Kuiper belt

Fri Jan 18 06:48:57 GMT 2008

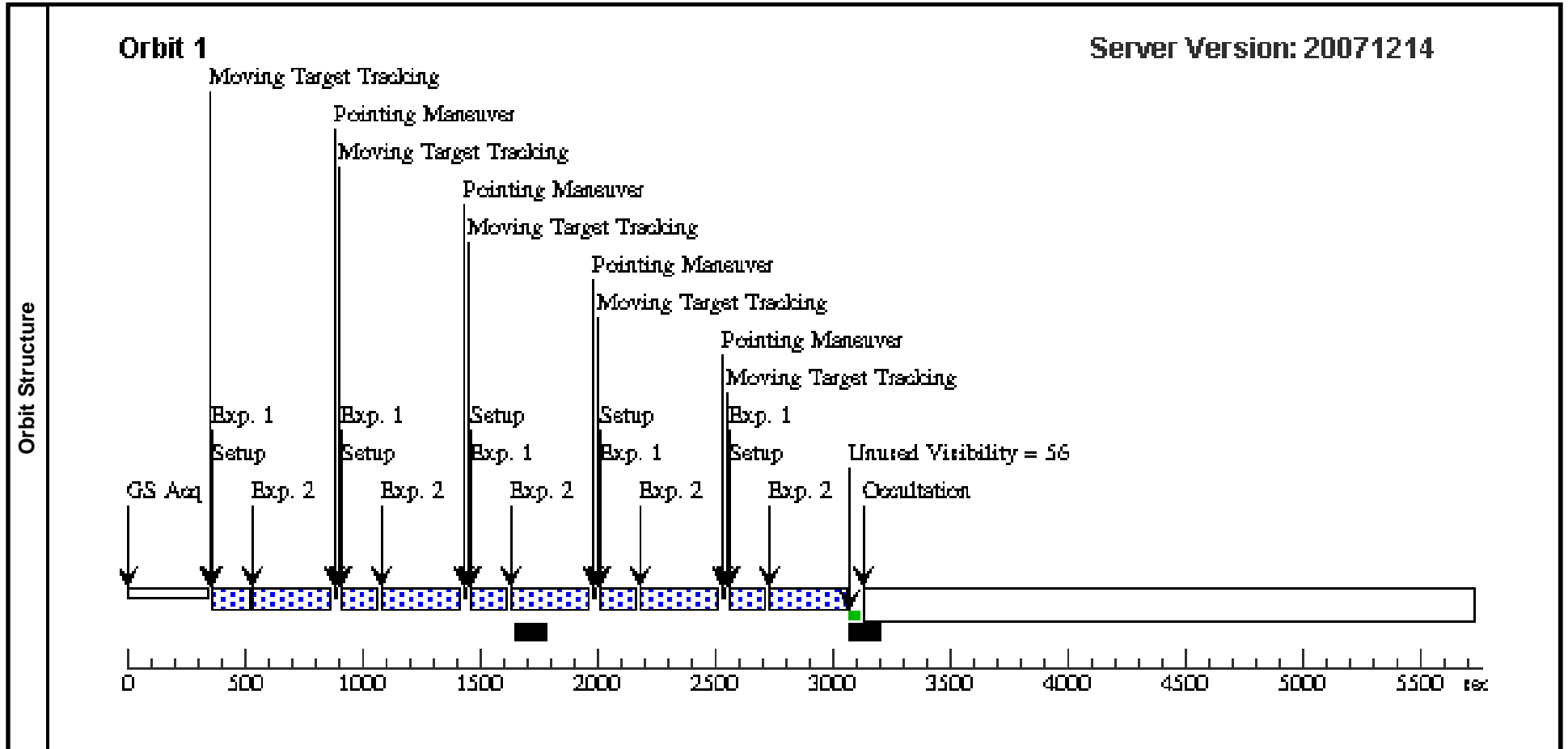
Visit	Proposal 11169, Visit 20, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: AFTER 08 BY 19.0 D TO 21.0 D Comments: AZ84 5 of 5										
	Patterns	#	Primary Pattern				Secondary Pattern				Exposures
(1)		Pattern Type=WFPC2-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.3535 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=45.0 Angle Between Sides= Center Pattern=false					(1-2)			
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center				
	(6)	2003AZ84	TYPE=ASTEROID,A=39.4134679811 142,E=0.18100034456736,I=13.59581 64872541,O=252.1429496589188,W= 15.03790665207049,M=215.20562040 70488,EQUINOX=J2000,EPOCH=10- APR-2007:00:00:00					EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1	(6) 2003AZ84	WFPC2, IMAGE, PC1	F606W		POS TARG -7.0,-8.0	Pattern 1-2 (1)	400.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]		
2	(6) 2003AZ84	WFPC2, IMAGE, PC1	F814W		POS TARG -7.0,-8.0	Pattern 1-2 (1)	500.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]			



Proposal 11169 - Visit 12 - Collisions in the Kuiper belt

Fri Jan 18 06:48:57 GMT 2008

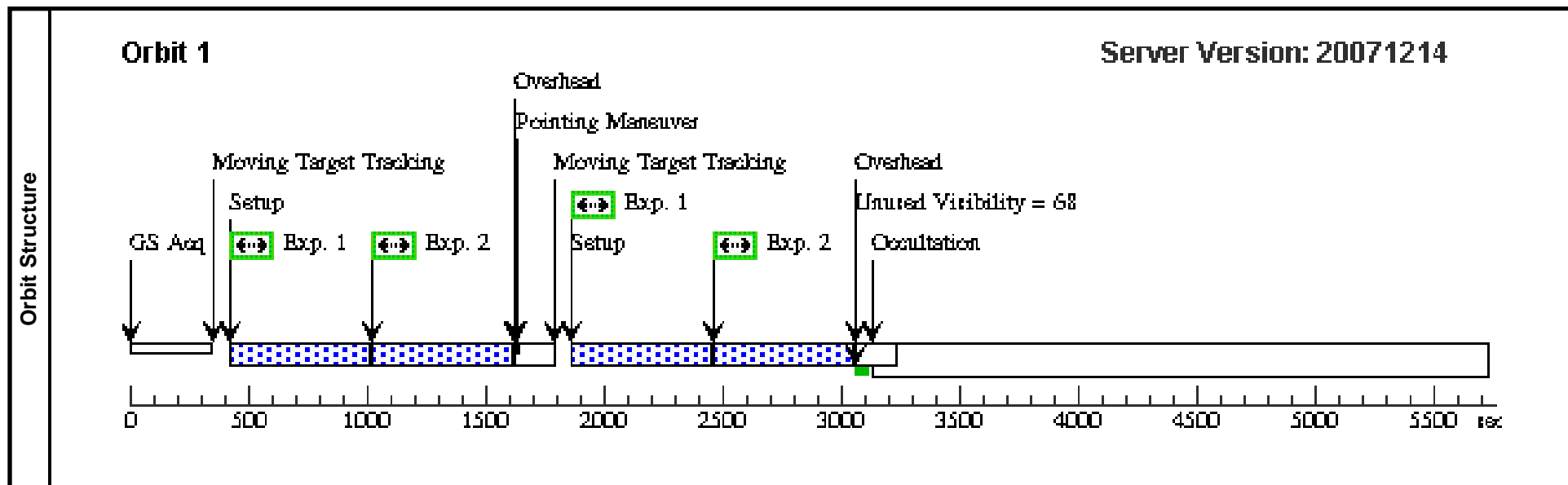
Visit	Proposal 11169, Visit 12, implementation Diagnostic Status: No Diagnostics Scientific Instruments: NIC1 Special Requirements: AFTER 08 BY 40.0 D TO 60.0 D Comments: AZ84 NICMOS									
	Patterns	#	Primary Pattern			Secondary Pattern			Exposures	
		(2)	Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG					(1-2)	
		Purpose=DITHER	Pattern Orientation=0.0							
		Number Of Points=5	Angle Between Sides=							
		Point Spacing=1.0	Center Pattern=false							
		Line Spacing=								
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center			
	(6)	2003AZ84	TYPE=ASTEROID,A=39.4134679811 142,E=0.18100034456736,I=13.59581 64872541,O=252.1429496589188,W= 15.03790665207049,M=215.20562040 70488,EQUINOX=J2000,EPOCH=10- APR-2007:00:00:00					EARTH		
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(6) 2003AZ84	NIC1, MULTIACCUM, NIC1	F110W	SAMP-SEQ=SPARS 16; NSAMP=11			Pattern 1-2 (2)	[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)] [=>(Pattern 5)]	[1]
	2	(6) 2003AZ84	NIC1, MULTIACCUM, NIC1	F160W	SAMP-SEQ=SPARS 16; NSAMP=22			Pattern 1-2 (2)	[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)] [=>(Pattern 5)]	[1]



Proposal 11169 - Visit 13 - Collisions in the Kuiper belt

Fri Jan 18 06:48:58 GMT 2008

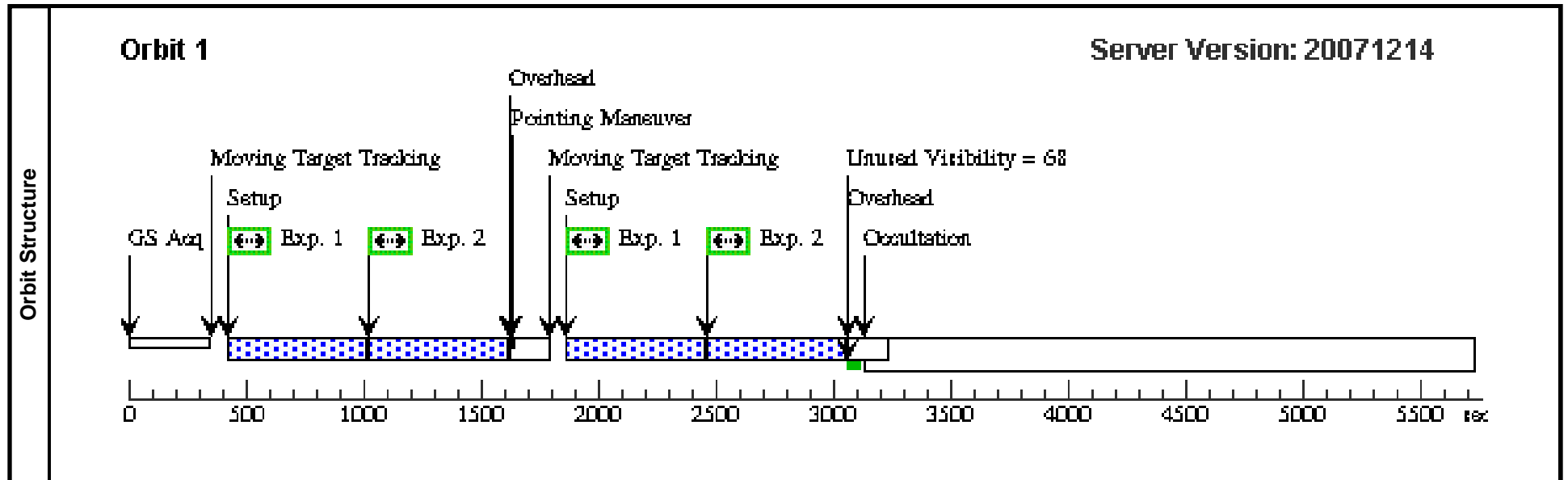
Visit	Proposal 11169, Visit 13, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: (none) Comments: ERIS PC									
	Patterns	#	Primary Pattern				Secondary Pattern			Exposures
		(1)	Pattern Type=WFPC2-LINE	Coordinate Frame=POS-TARG						(1-2)
		Purpose=DITHER	Pattern Orientation=45.0							
		Number Of Points=2	Angle Between Sides=							
		Point Spacing=0.3535	Center Pattern=false							
		Line Spacing=								
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center			
	(1)	ERIS	TYPE=ASTEROID,A=67.7315530579 866,E=0.43998702058664,I=44.15948 07936589,O=35.88444731431473,W= 151.5586008885899,M=197.96477360 17444,EQUINOX=J2000,EPOCH=10- APR-2007:00:00:00					EARTH		
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(1) ERIS	WFPC2, IMAGE, PC1	F606W		POS TARG -7.0,-8.0	Pattern 1-2 (1)	400.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]	
	2	(1) ERIS	WFPC2, IMAGE, PC1	F814W		POS TARG -7.0,-8.0	Pattern 1-2 (1)	500.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]	



Proposal 11169 - Visit 14 - Collisions in the Kuiper belt

Fri Jan 18 06:48:58 GMT 2008

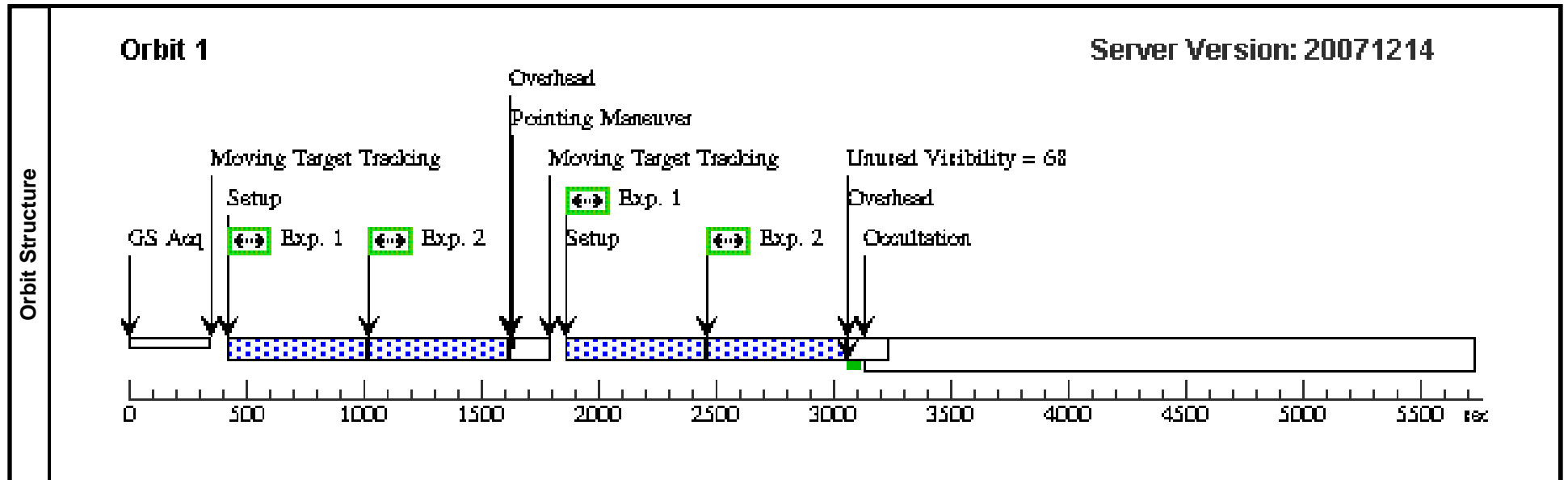
Visit	Proposal 11169, Visit 14, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: (none) <i>Comments: Orcus PC</i>										
	Patterns	#	Primary Pattern				Secondary Pattern				Exposures
(1)		Pattern Type=WFPC2-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.3535 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=45.0 Angle Between Sides= Center Pattern=false							(1-2)	
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center				
	(5)	ORCUS	TYPE=ASTEROID,A=39.3000681661 493,E=0.22248676861105,I=20.59398 08460058,O=268.7244140961953,W= 72.41157825791632,M=162.48116785 69159,EQUINOX=J2000,EPOCH=10- APR-2007:00:00:00					EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1	(5) ORCUS	WFPC2, IMAGE, PC1	F606W		POS TARG -7.0,-8.0	Pattern 1-2 (1)	400.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]			[1]
2	(5) ORCUS	WFPC2, IMAGE, PC1	F814W		POS TARG -7.0,-8.0	Pattern 1-2 (1)	500.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]			[1]	



Proposal 11169 - Visit 15 - Collisions in the Kuiper belt

Fri Jan 18 06:48:58 GMT 2008

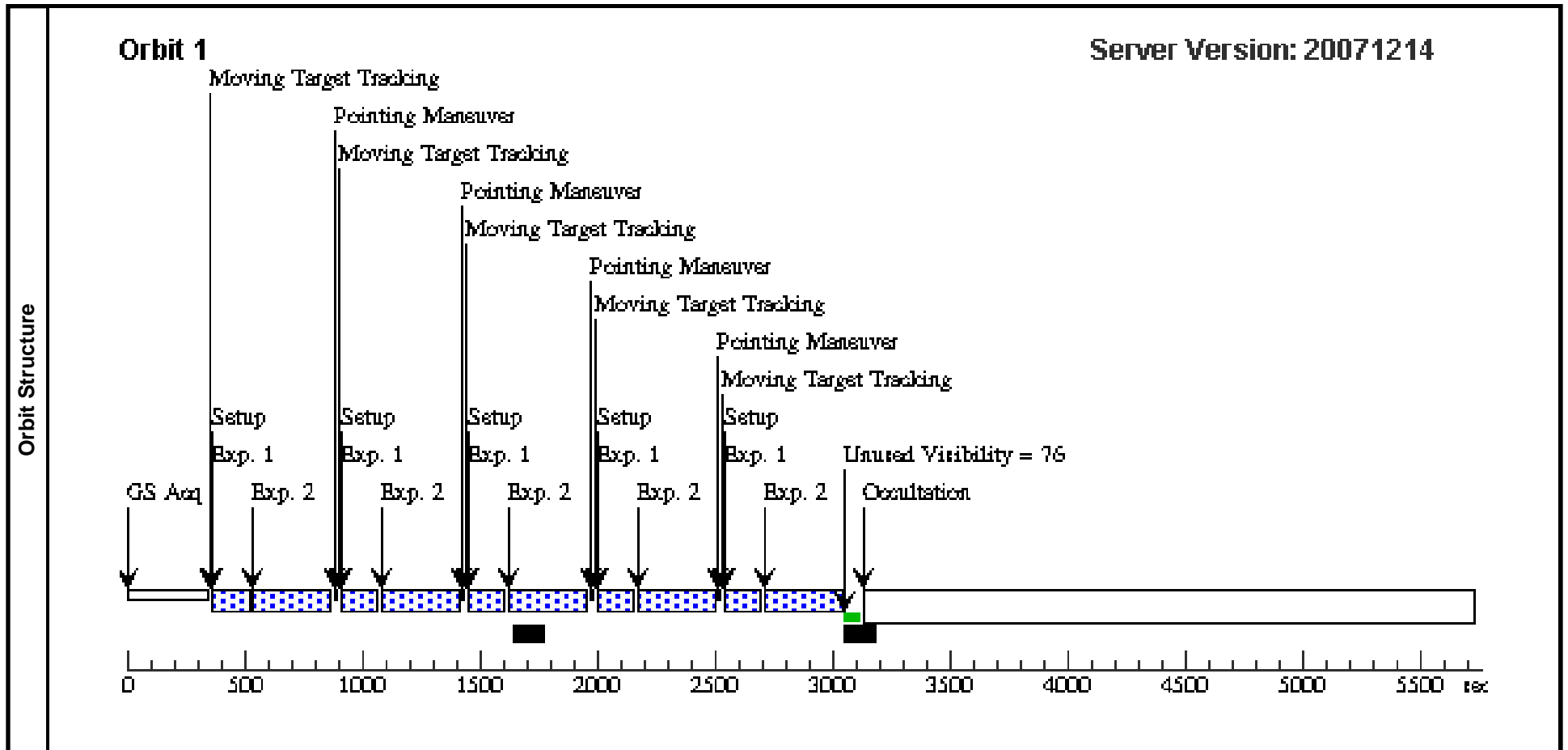
Visit	Proposal 11169, Visit 15, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: (none) <i>Comments: Haumea PC</i>										
	Patterns	#	Primary Pattern				Secondary Pattern				Exposures
(1)		Pattern Type=WFPC2-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.3535 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=45.0 Angle Between Sides= Center Pattern=false					(1-2)			
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center				
	(3)	2003EL61	TYPE=ASTEROID,A=43.2825415295 29,E=0.19089667026643,I=28.214073 9768962,O=122.0267922140126,W=2 39.0407079471863,M=200.729294691 0808,EQUINOX=J2000,EPOCH=10- APR-2007:00:00:00					EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1	(3) 2003EL61	WFPC2, IMAGE, PC1	F606W		POS TARG -7.0,-8.0	Pattern 1-2 (1)	400.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]		
2	(3) 2003EL61	WFPC2, IMAGE, PC1	F814W		POS TARG -7.0,-8.0	Pattern 1-2 (1)	500.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]			



Proposal 11169 - Visit 16 - Collisions in the Kuiper belt

Fri Jan 18 06:48:58 GMT 2008

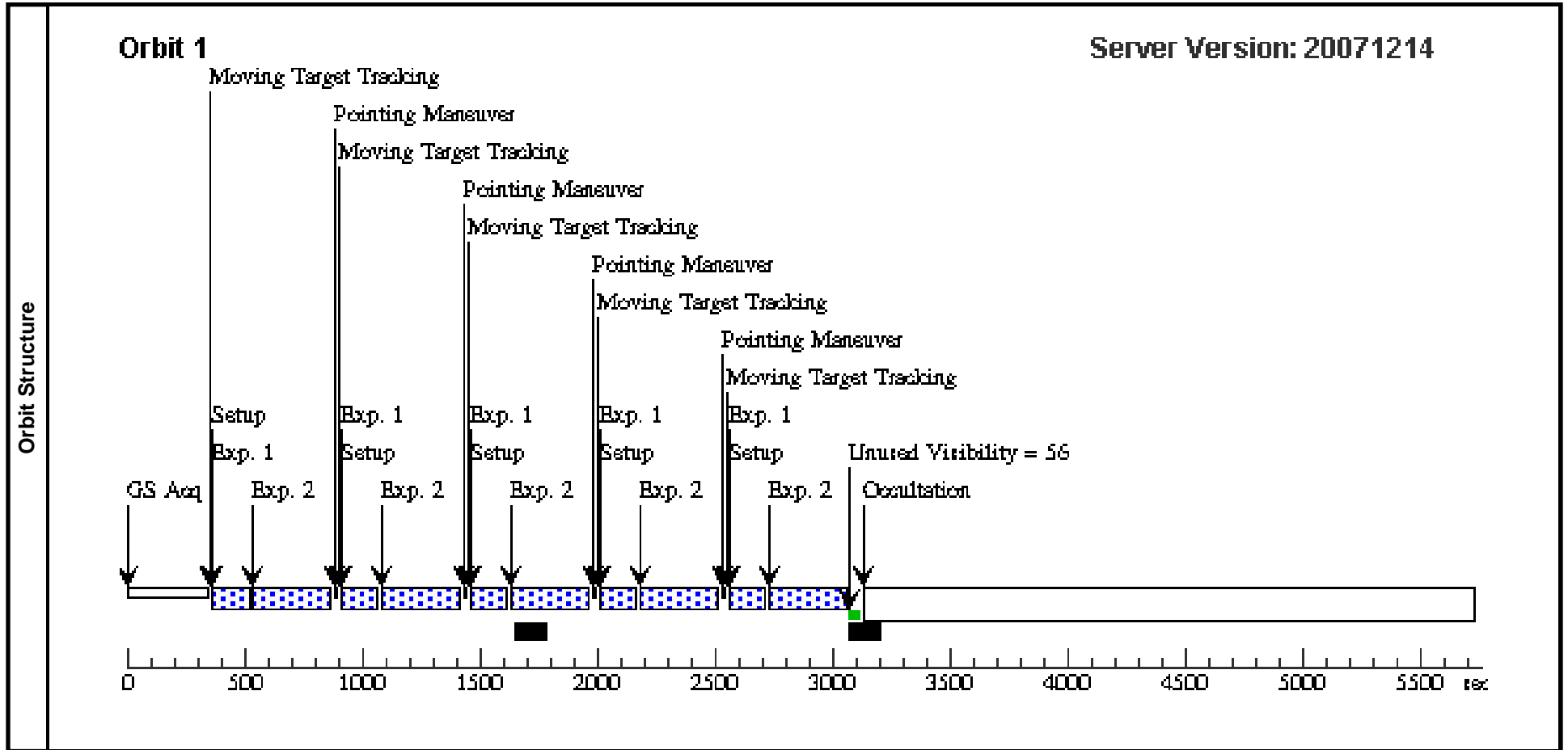
Visit	Proposal 11169, Visit 16, implementation Diagnostic Status: No Diagnostics Scientific Instruments: NIC2 Special Requirements: (none) Comments: <i>Eris NICMOS</i>										
	Patterns	#	Primary Pattern				Secondary Pattern				Exposures
(2)		Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG							(1-2)	
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center				
	(1)	ERIS	TYPE=ASTEROID,A=67.7315530579 866,E=0.43998702058664,I=44.15948 07936589,O=35.88444731431473,W= 151.5586008885899,M=197.96477360 17444,EQUINOX=J2000,EPOCH=10- APR-2007:00:00:00					EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1	(1) ERIS	NIC2, MULTIACCUM, NIC2	F110W	SAMP-SEQ=SPARS 16; NSAMP=11			Pattern 1-2 (2)	[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)] [=>(Pattern 5)]		[1]
2	(1) ERIS	NIC2, MULTIACCUM, NIC2	F160W	SAMP-SEQ=SPARS 16; NSAMP=22			Pattern 1-2 (2)	[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)] [=>(Pattern 5)]		[1]	



Proposal 11169 - Visit 17 - Collisions in the Kuiper belt

Fri Jan 18 06:48:59 GMT 2008

Visit	Proposal 11169, Visit 17, implementation Diagnostic Status: No Diagnostics Scientific Instruments: NIC1 Special Requirements: (none) Comments: <i>Haumea NICMOS</i>										
	Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
(2)		Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG						(1-2)		
		Purpose=DITHER	Pattern Orientation=0.0								
		Number Of Points=5	Angle Between Sides=								
		Point Spacing=1.0	Center Pattern=false								
		Line Spacing=									
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center				
	(3)	2003EL61	TYPE=ASTEROID,A=43.2825415295 29,E=0.19089667026643,I=28.214073 9768962,O=122.0267922140126,W=2 39.0407079471863,M=200.729294691 0808,EQUINOX=J2000,EPOCH=10- APR-2007:00:00:00					EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1	(3) 2003EL61	NIC1, MULTIACCUM, NIC1	F110W	SAMP-SEQ=SPARS 16; NSAMP=11			Pattern 1-2 (2)	[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)] [=>(Pattern 5)]		[1]
	2	(3) 2003EL61	NIC1, MULTIACCUM, NIC1	F160W	SAMP-SEQ=SPARS 16; NSAMP=22			Pattern 1-2 (2)	[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)] [=>(Pattern 5)]		[1]



Proposal 11169 - Visit 18 - Collisions in the Kuiper belt

Fri Jan 18 06:48:59 GMT 2008

Visit	Proposal 11169, Visit 18, implementation Diagnostic Status: No Diagnostics Scientific Instruments: NIC1 Special Requirements: (none) Comments: <i>Orcus NICMOS</i>										
	Patterns	#	Primary Pattern			Secondary Pattern			Exposures		
		(2)	Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG							(1-2)
		Purpose=DITHER	Pattern Orientation=0.0								
		Number Of Points=5	Angle Between Sides=								
		Point Spacing=1.0	Center Pattern=false								
		Line Spacing=									
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center				
	(5)	ORCUS	TYPE=ASTEROID,A=39.3000681661 493,E=0.22248676861105,I=20.59398 08460058,O=268.7244140961953,W= 72.41157825791632,M=162.48116785 69159,EQUINOX=J2000,EPOCH=10- APR-2007:00:00:00					EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1	(5) ORCUS	NIC1, MULTIACCUM, NIC1	F110W	SAMP-SEQ=SPARS 16; NSAMP=11			Pattern 1-2 (2)	[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)] [=>(Pattern 5)]		[1]
2	(5) ORCUS	NIC1, MULTIACCUM, NIC1	F160W	SAMP-SEQ=SPARS 16; NSAMP=22			Pattern 1-2 (2)	[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)] [=>(Pattern 5)]		[1]	

