



11990 - Determining the Physical Properties of Comet 103P/Hartley 2 in Support of NASA's EPOXI Mission

Cycle: 16, Proposal Category: GO/DD

(Availability Mode: SUPPORTED)

INVESTIGATORS

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VISITS

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
01	(1) COMET-103P-HARTLEY2	WFPC2	1	16-Feb-2009 21:52:10.0	yes
02	(1) COMET-103P-HARTLEY2	WFPC2	1	16-Feb-2009 21:52:15.0	yes
03	(1) COMET-103P-HARTLEY2	WFPC2	1	16-Feb-2009 21:52:18.0	yes
04	(1) COMET-103P-HARTLEY2	WFPC2	1	16-Feb-2009 21:52:22.0	yes
05	(1) COMET-103P-HARTLEY2	WFPC2	1	16-Feb-2009 21:52:25.0	yes
06	(1) COMET-103P-HARTLEY2	WFPC2	1	16-Feb-2009 21:52:28.0	yes
07	(1) COMET-103P-HARTLEY2	WFPC2	1	16-Feb-2009 21:52:31.0	yes
08	(1) COMET-103P-HARTLEY2	WFPC2	1	16-Feb-2009 21:52:35.0	yes
09	(1) COMET-103P-HARTLEY2	WFPC2	1	16-Feb-2009 21:52:38.0	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>
10	(1) COMET-103P-HARTLEY2	WFPC2	1	16-Feb-2009 21:52:41.0	yes
11	(1) COMET-103P-HARTLEY2	WFPC2	1	16-Feb-2009 21:52:44.0	yes
12	(1) COMET-103P-HARTLEY2	WFPC2	1	16-Feb-2009 21:52:47.0	yes

12 Total Orbits Used

ABSTRACT

We request 12 orbits of imaging to measure the size, shape, and rotation period of the nucleus of comet 103P/Hartley 2, the target of NASA's EPOXI mission. Knowledge of rotation period at the 20% level is required early to plan the mission sequencing, and the only time to secure these observations before the coma signal dominates the nucleus is during the first half of 2009. As demonstrated by the international campaigns to determine the rotation period of comet 9P/Tempel 1 for both the Deep Impact and Stardust-NExT missions, spacecraft and Earth-based observations can be combined to achieve unprecedented accuracy on the rotation of the nucleus. For comet Tempel 1 this has led to paradigm-changing ideas about the physical processes responsible for cometary activity. The nucleus flyby of 103P/Hartley 2 on 2010 November 4 presents another opportunity for unique science enabled by combining ground-based and in-situ observations. The size and shape of the comet's nucleus are currently uncertain, and the rotation period is completely unknown. Hubble observations are uniquely suited to measure the physical properties of this nucleus.

OBSERVING DESCRIPTION

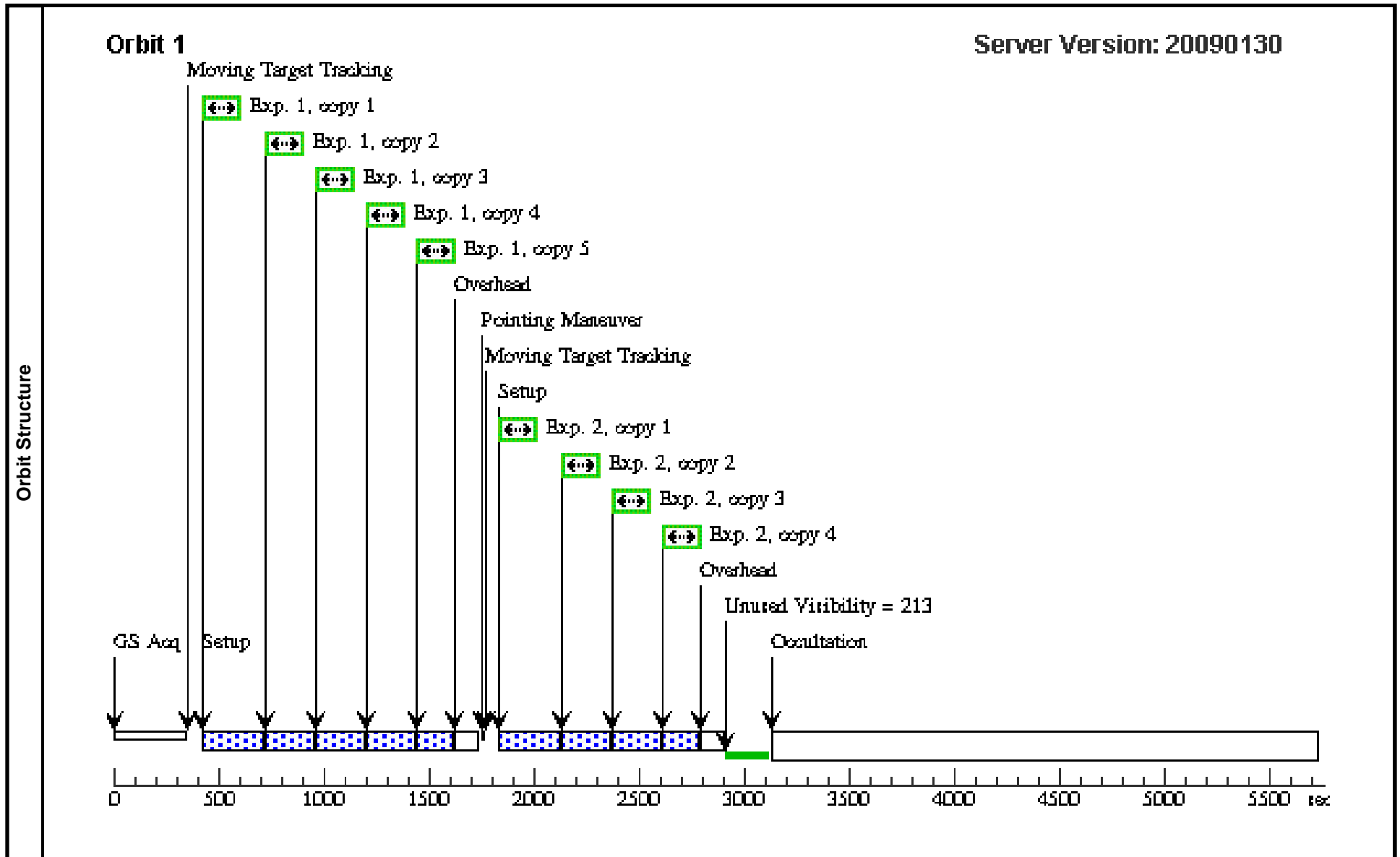
Simple 12-orbit imaging program on comet 103P/Hartley 2. The *optimum* cadence is to observe the comet for 6 consecutive orbits followed by every other orbit until 12 orbits are accumulated. That is, observe during orbit #s 1,2,3,4,5,6,8,10,12,14,16, and 18, if possible.

Each orbit has exactly the same observations, namely, 4 or 5 images taken using F606W with an exposure time of ~500 sec each. The observations will use a 2-point dither, with 2-3 images at one location (whatever fits) and 2 images at the dithered location.

Proposal 11990 - Visit 01 - Determining the Physical Properties of Comet 103P/Hartley 2 in Support of NASA's EPOXI Mi...

Tue Feb 17 02:52:50 GMT 2009

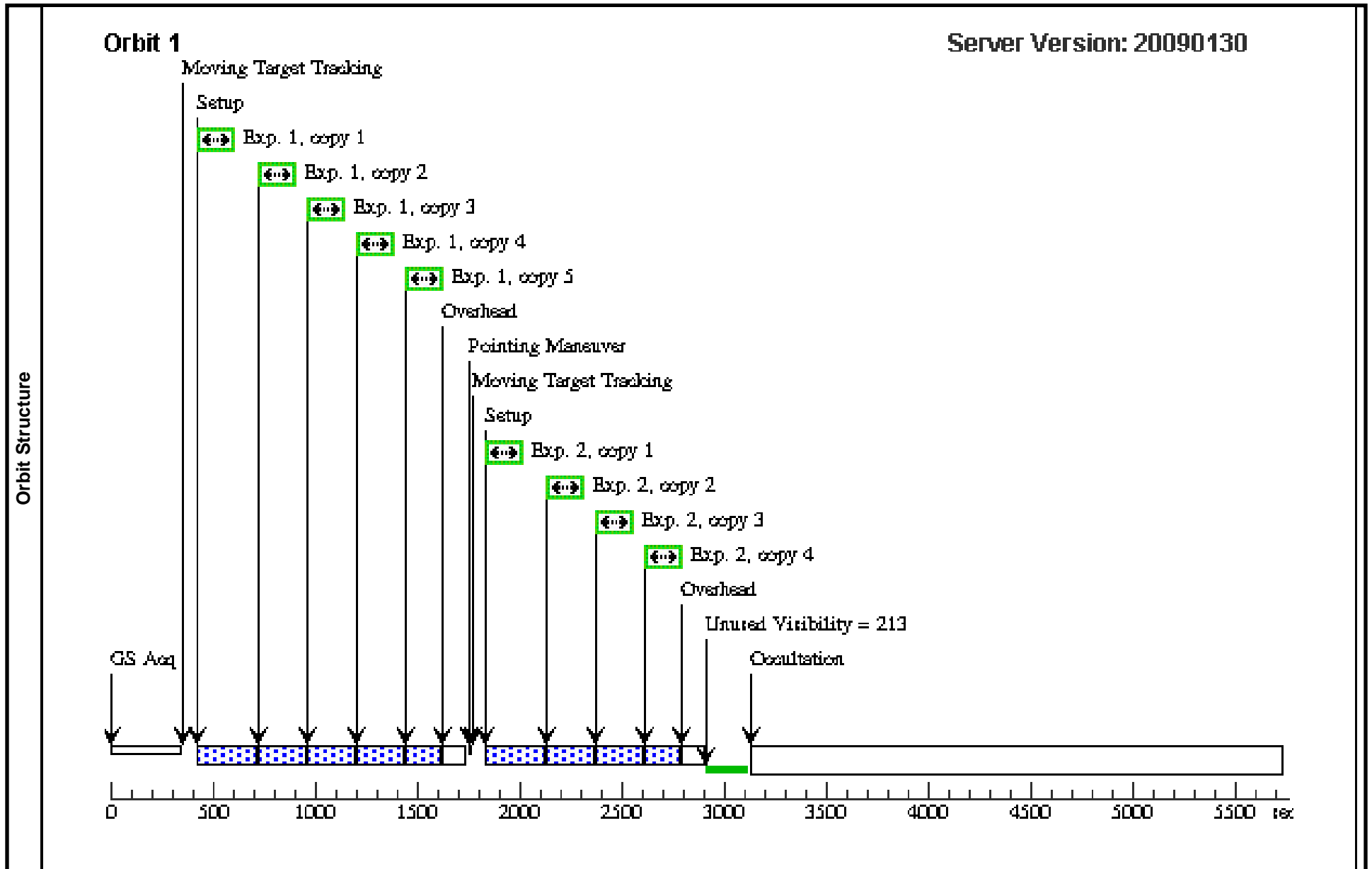
Visit	Proposal 11990, Visit 01, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: (none)									
	Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center		
	(1)	COMET-103P-HARTLEY2	TYPE=COMET,Q=1.058511801388959,E=0.6948695649929406,I=13.61750532380278,O=219.7741026974964,W=181.2322425726619,T=28-OCT-2010:11:54:31,EQUINOX=J2000,EPOCH=01-NOV-2008:00:00:00,A1=1.56775E-09,A2=-2.725287E-10,A3=2.172315E-10					EARTH		
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(1) COMET-103P-HARTLEY2	WFPC2, IMAGE, PC1	F606W	CR-SPLIT=NO	POS TARG 0.000,0.000		160 Secs X 5 [=>(Copy 1)] [=>(Copy 2)] [=>(Copy 3)] [=>(Copy 4)] [=>(Copy 5)]	[1]
2		(1) COMET-103P-HARTLEY2	WFPC2, IMAGE, PC1	F606W	CR-SPLIT=NO	POS TARG 0.249,0.249		160 Secs X 4 [=>(Copy 1)] [=>(Copy 2)] [=>(Copy 3)] [=>(Copy 4)]	[1]	



Proposal 11990 - Visit 02 - Determining the Physical Properties of Comet 103P/Hartley 2 in Support of NASA's EPOXI Mi...

Tue Feb 17 02:52:51 GMT 2009

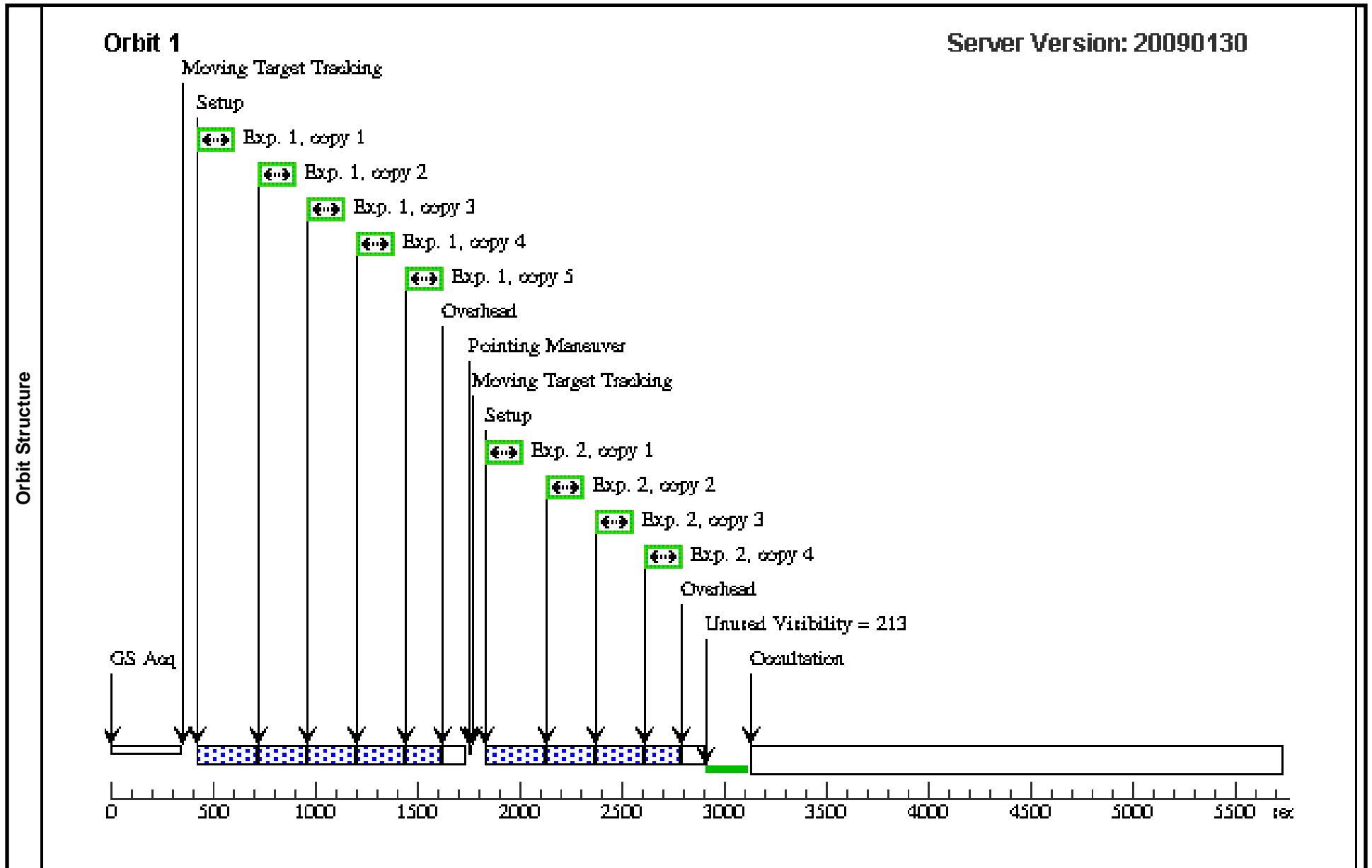
Visit	Proposal 11990, Visit 02, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: AFTER 01 BY 0.8 Orbits TO 1.2 Orbits									
	Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center		
	(1)	COMET-103P-HARTLEY2	TYPE=COMET,Q=1.0585118013889 59,E=0.6948695649929406,I=13.6175 0532380278,O=219.7741026974964, W=181.2322425726619,T=28-OCT- 2010:11:54:31,EQUINOX=J2000,EPO CH=01-NOV- 2008:00:00:00,A1=1.56775E-09,A2=- 2.725287E-10,A3=2.172315E-10					EARTH		
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(1) COMET-103P-HARTLEY2	WFPC2, IMAGE, PC1	F606W	CR-SPLIT=NO	POS TARG 0.000,0.000		160 Secs X 5 [=>(Copy 1)] [=>(Copy 2)] [=>(Copy 3)] [=>(Copy 4)] [=>(Copy 5)]	[1]
2		(1) COMET-103P-HARTLEY2	WFPC2, IMAGE, PC1	F606W	CR-SPLIT=NO	POS TARG 0.249,0.249		160 Secs X 4 [=>(Copy 1)] [=>(Copy 2)] [=>(Copy 3)] [=>(Copy 4)]	[1]	



Proposal 11990 - Visit 03 - Determining the Physical Properties of Comet 103P/Hartley 2 in Support of NASA's EPOXI Mi...

Tue Feb 17 02:52:52 GMT 2009

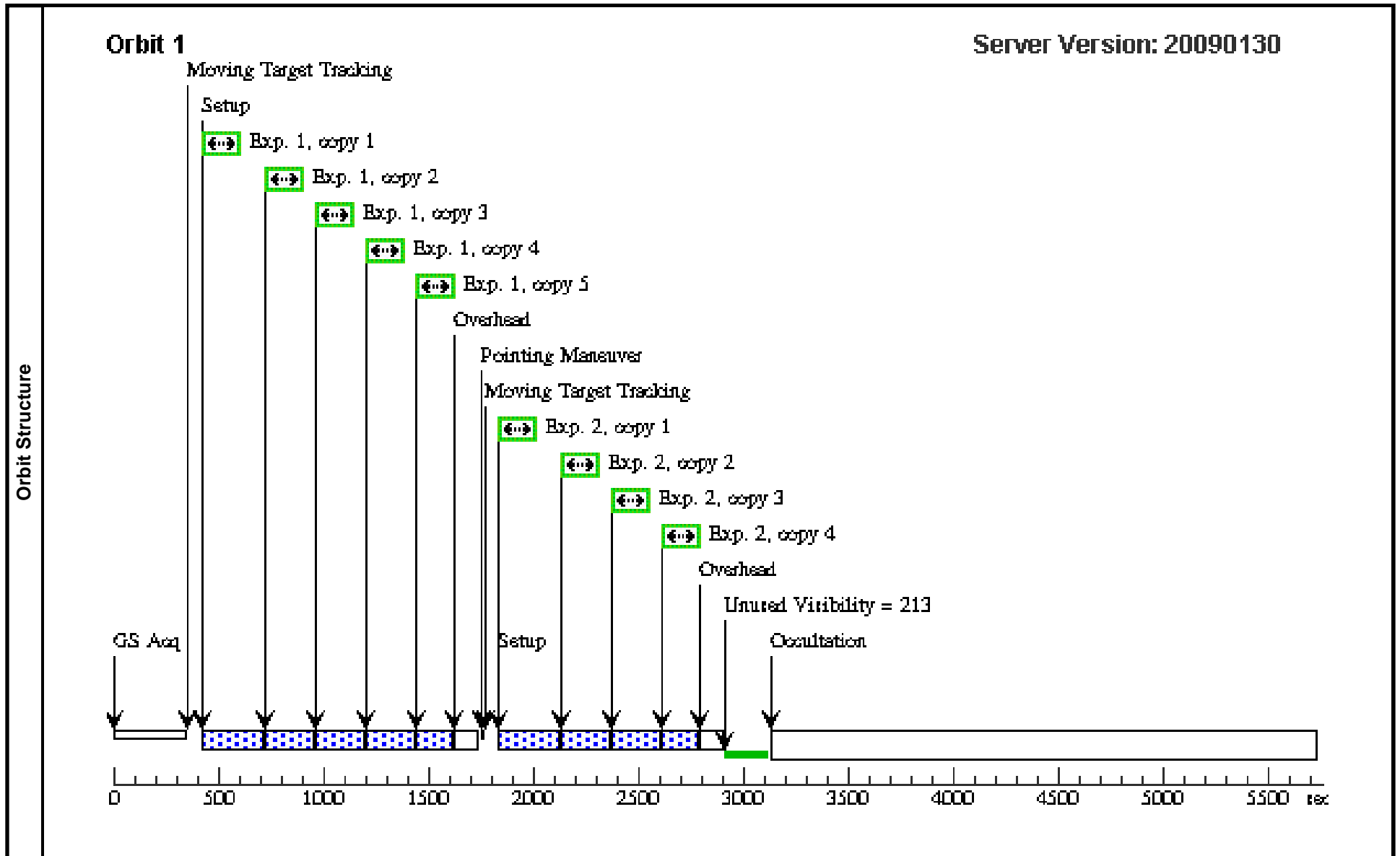
Visit	Proposal 11990, Visit 03, implementation										
	Diagnostic Status: No Diagnostics										
Solar System Targets	Scientific Instruments: WFPC2										
	Special Requirements: AFTER 02 BY 0.8 Orbits TO 1.2 Orbits										
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center					
(1)	COMET-103P-HARTLEY2	TYPE=COMET,Q=1.0585118013889 59,E=0.6948695649929406,I=13.6175 0532380278,O=219.7741026974964, W=181.2322425726619,T=28-OCT- 2010:11:54:31,EQUINOX=J2000,EPO CH=01-NOV- 2008:00:00:00,A1=1.56775E-09,A2=- 2.725287E-10,A3=2.172315E-10					EARTH				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit	
	1		(1) COMET-103P-HARTLEY2	WFPC2, IMAGE, PC1	F606W	CR-SPLIT=NO	POS TARG 0.000,0.000		160 Secs X 5 [=>(Copy 1)] [=>(Copy 2)] [=>(Copy 3)] [=>(Copy 4)] [=>(Copy 5)]	[1]	
	2		(1) COMET-103P-HARTLEY2	WFPC2, IMAGE, PC1	F606W	CR-SPLIT=NO	POS TARG 0.249,0.249		160 Secs X 4 [=>(Copy 1)] [=>(Copy 2)] [=>(Copy 3)] [=>(Copy 4)]	[1]	



Proposal 11990 - Visit 04 - Determining the Physical Properties of Comet 103P/Hartley 2 in Support of NASA's EPOXI Mi...

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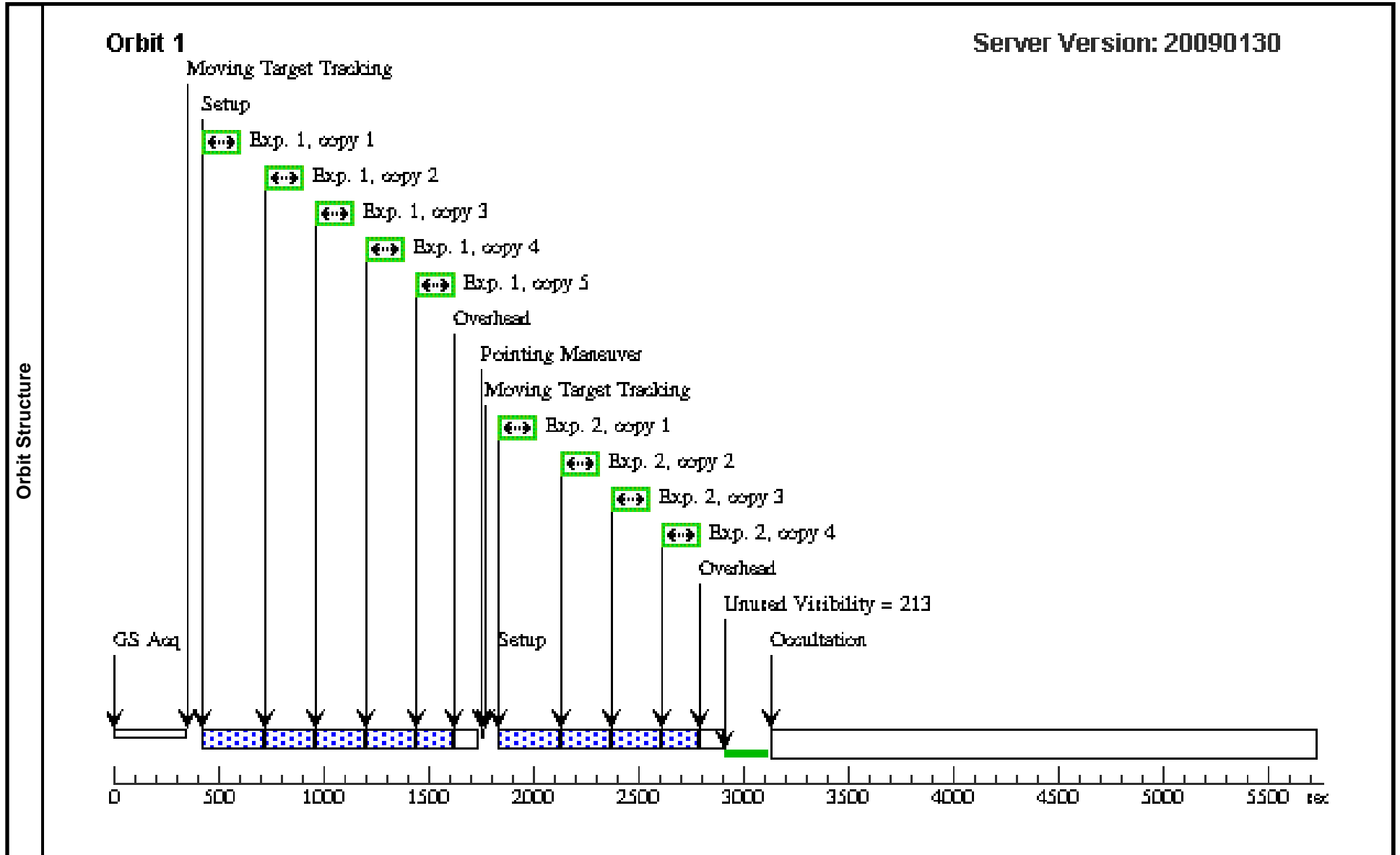
Visit	Proposal 11990, Visit 04, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: AFTER 03 BY 0.8 Orbits TO 1.2 Orbits									
	Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center		
	(1)	COMET-103P-HARTLEY2	TYPE=COMET,Q=1.0585118013889 59,E=0.6948695649929406,I=13.6175 0532380278,O=219.7741026974964, W=181.2322425726619,T=28-OCT- 2010:11:54:31,EQUINOX=J2000,EPO CH=01-NOV- 2008:00:00:00,A1=1.56775E-09,A2=- 2.725287E-10,A3=2.172315E-10					EARTH		
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(1) COMET-103P-HARTLEY2	WFPC2, IMAGE, PC1	F606W	CR-SPLIT=NO	POS TARG 0.000,0.000		160 Secs X 5 [=>(Copy 1)] [=>(Copy 2)] [=>(Copy 3)] [=>(Copy 4)] [=>(Copy 5)]	[1]
2		(1) COMET-103P-HARTLEY2	WFPC2, IMAGE, PC1	F606W	CR-SPLIT=NO	POS TARG 0.249,0.249		160 Secs X 4 [=>(Copy 1)] [=>(Copy 2)] [=>(Copy 3)] [=>(Copy 4)]	[1]	



Proposal 11990 - Visit 05 - Determining the Physical Properties of Comet 103P/Hartley 2 in Support of NASA's EPOXI Mi...

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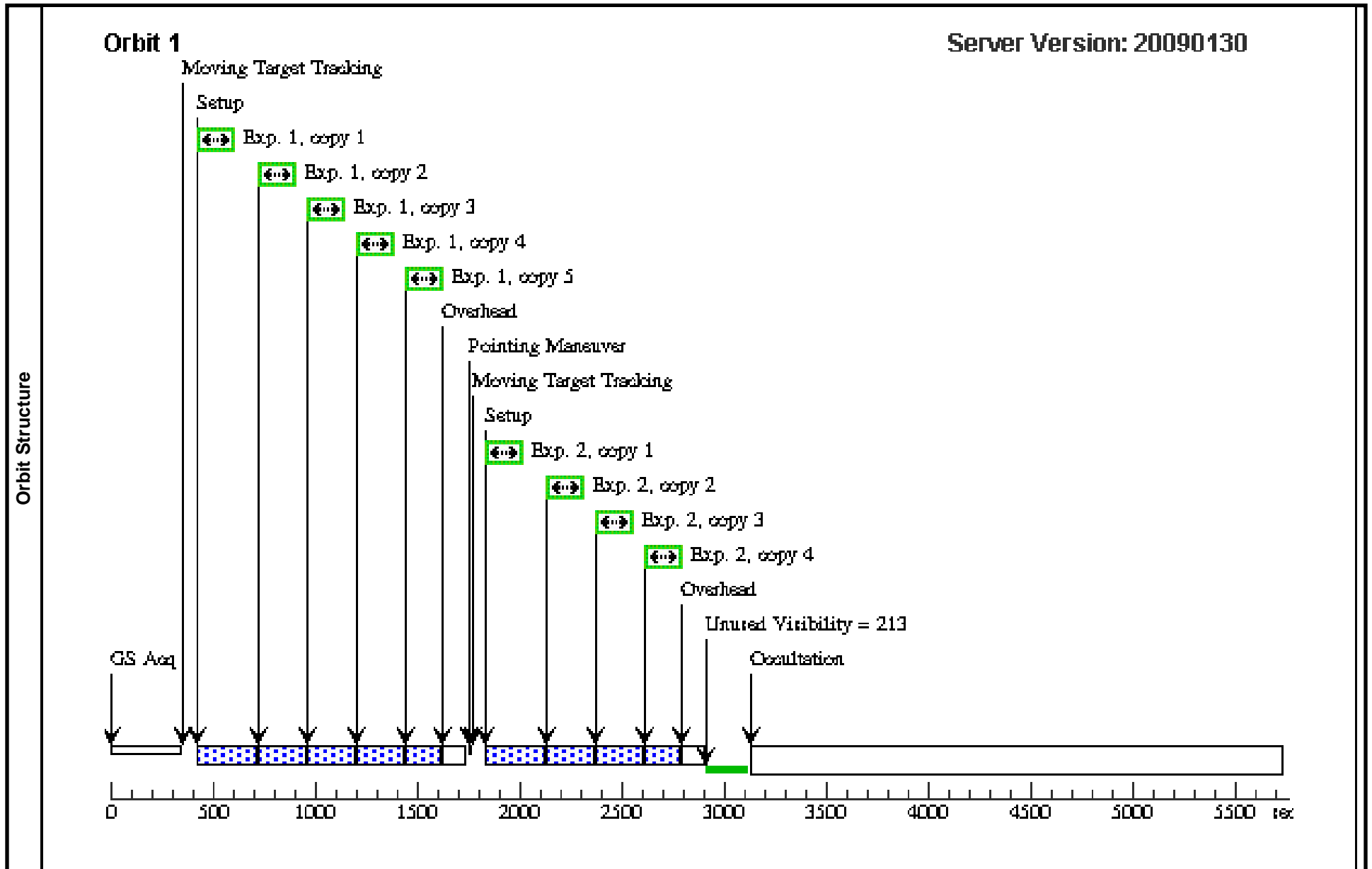
Visit	Proposal 11990, Visit 05, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: AFTER 04 BY 0.8 Orbits TO 1.2 Orbits									
	Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center		
	(1)	COMET-103P-HARTLEY2	TYPE=COMET,Q=1.058511801388959,E=0.6948695649929406,I=13.61750532380278,O=219.7741026974964,W=181.2322425726619,T=28-OCT-2010:11:54:31,EQUINOX=J2000,EPOCH=01-NOV-2008:00:00:00,A1=1.56775E-09,A2=-2.725287E-10,A3=2.172315E-10					EARTH		
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(1) COMET-103P-HARTLEY2	WFPC2, IMAGE, PC1	F606W	CR-SPLIT=NO	POS TARG 0.000,0.000		160 Secs X 5 [=>(Copy 1)] [=>(Copy 2)] [=>(Copy 3)] [=>(Copy 4)] [=>(Copy 5)]	[1]
2		(1) COMET-103P-HARTLEY2	WFPC2, IMAGE, PC1	F606W	CR-SPLIT=NO	POS TARG 0.249,0.249		160 Secs X 4 [=>(Copy 1)] [=>(Copy 2)] [=>(Copy 3)] [=>(Copy 4)]	[1]	



Proposal 11990 - Visit 06 - Determining the Physical Properties of Comet 103P/Hartley 2 in Support of NASA's EPOXI Mi...

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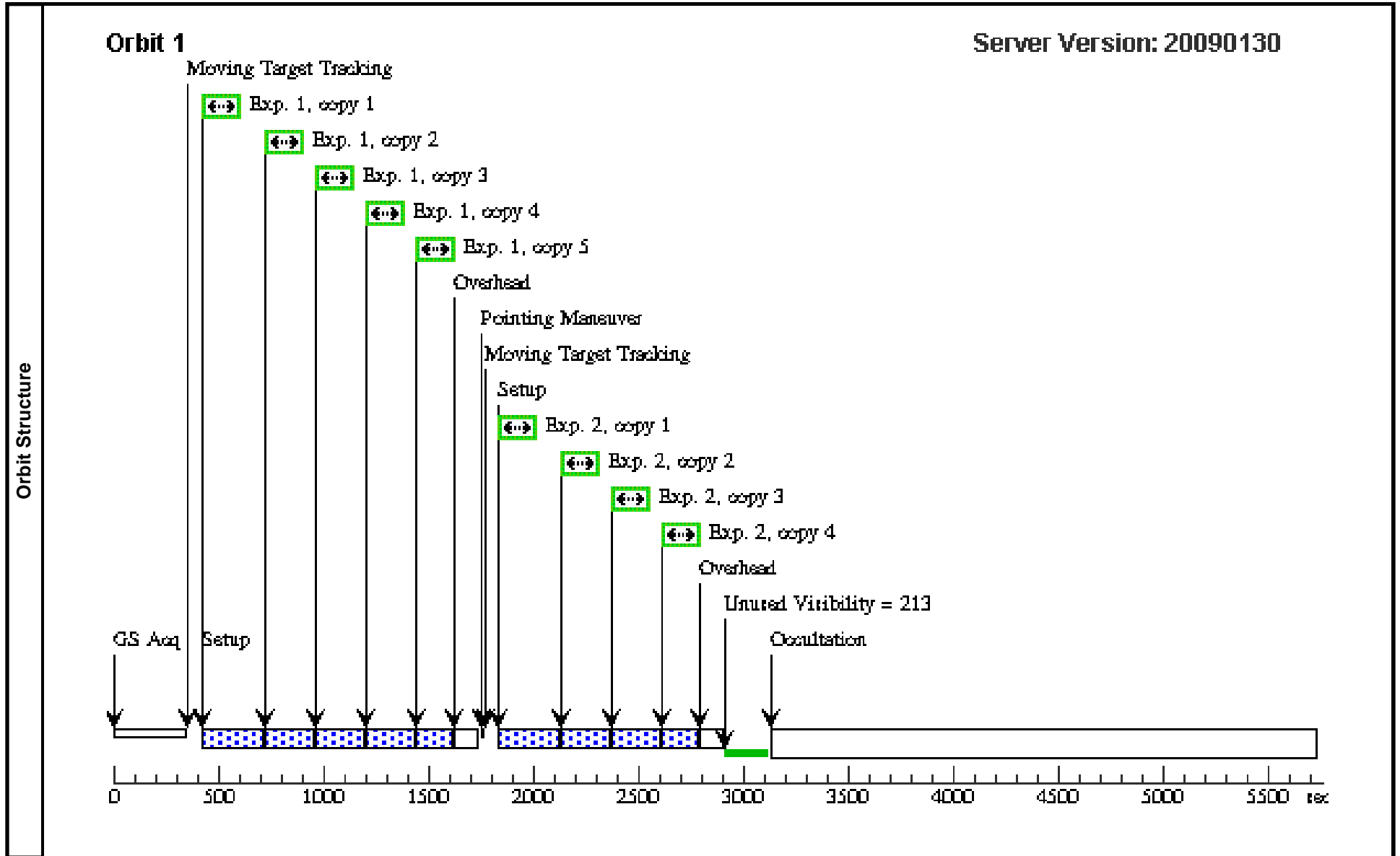
Visit	Proposal 11990, Visit 06, implementation										
	Diagnostic Status: No Diagnostics										
Solar System Targets	Scientific Instruments: WFPC2										
	Special Requirements: AFTER 05 BY 0.8 Orbits TO 1.2 Orbits										
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center					
(1)	COMET-103P-HARTLEY2	TYPE=COMET,Q=1.0585118013889 59,E=0.6948695649929406,I=13.6175 0532380278,O=219.7741026974964, W=181.2322425726619,T=28-OCT- 2010:11:54:31,EQUINOX=J2000,EPO CH=01-NOV- 2008:00:00:00,A1=1.56775E-09,A2=- 2.725287E-10,A3=2.172315E-10					EARTH				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit	
	1		(1) COMET-103P-HARTLEY2	WFPC2, IMAGE, PC1	F606W	CR-SPLIT=NO	POS TARG 0.000,0.000		160 Secs X 5 [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)]	[1]	
	2		(1) COMET-103P-HARTLEY2	WFPC2, IMAGE, PC1	F606W	CR-SPLIT=NO	POS TARG 0.249,0.249		160 Secs X 4 [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)]	[1]	



Proposal 11990 - Visit 07 - Determining the Physical Properties of Comet 103P/Hartley 2 in Support of NASA's EPOXI Mi...

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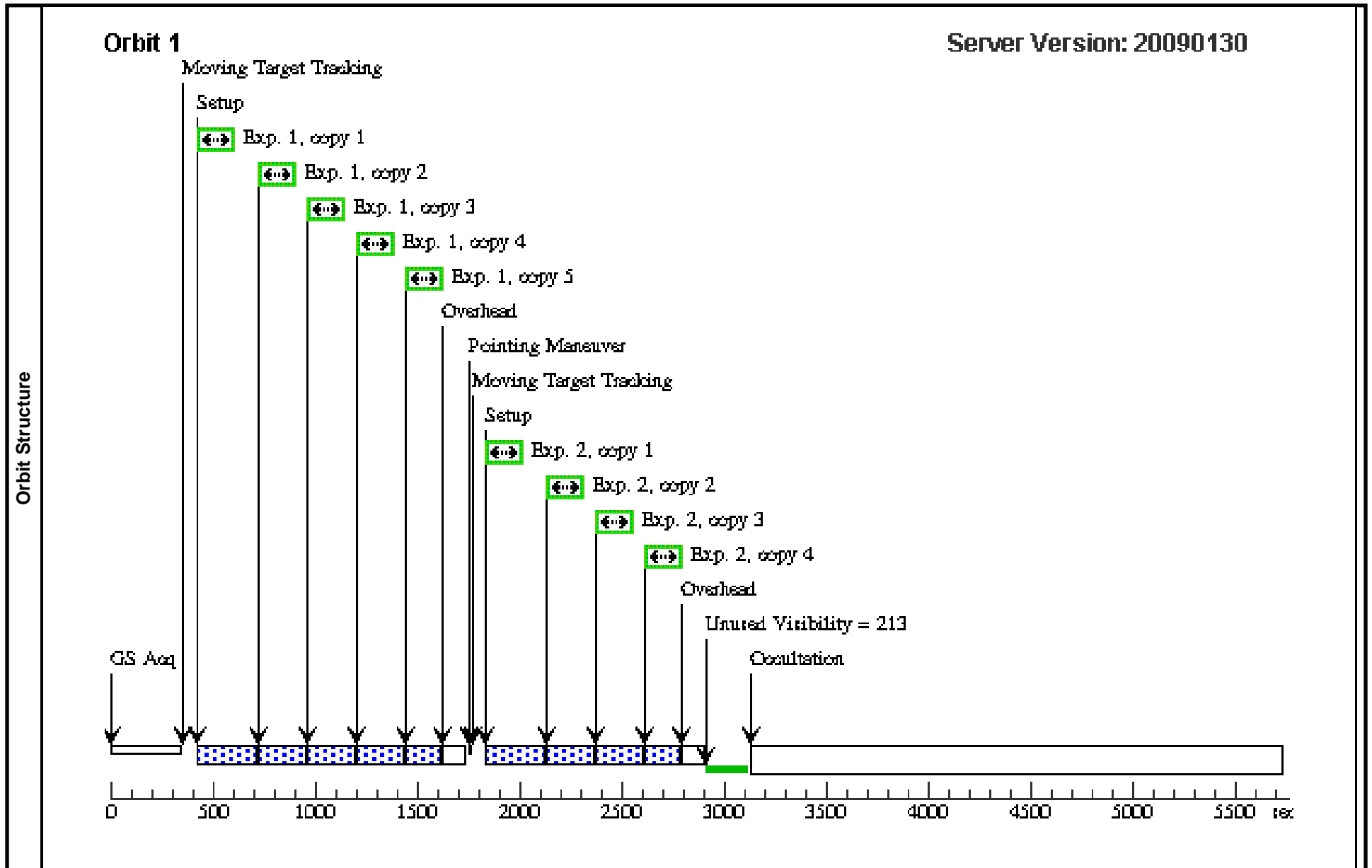
Visit	Proposal 11990, Visit 07, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: AFTER 06 BY 1.8 Orbits TO 2.2 Orbits									
	Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center		
	(1)	COMET-103P-HARTLEY2	TYPE=COMET,Q=1.0585118013889 59,E=0.6948695649929406,I=13.6175 0532380278,O=219.7741026974964, W=181.2322425726619,T=28-OCT- 2010:11:54:31,EQUINOX=J2000,EPO CH=01-NOV- 2008:00:00:00,A1=1.56775E-09,A2=- 2.725287E-10,A3=2.172315E-10					EARTH		
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(1) COMET-103P-HARTLEY2	WFPC2, IMAGE, PC1	F606W	CR-SPLIT=NO	POS TARG 0.000,0.000		160 Secs X 5 [=>(Copy 1)] [=>(Copy 2)] [=>(Copy 3)] [=>(Copy 4)] [=>(Copy 5)]	[1]
	2		(1) COMET-103P-HARTLEY2	WFPC2, IMAGE, PC1	F606W	CR-SPLIT=NO	POS TARG 0.249,0.249		160 Secs X 4 [=>(Copy 1)] [=>(Copy 2)] [=>(Copy 3)] [=>(Copy 4)]	[1]



Proposal 11990 - Visit 08 - Determining the Physical Properties of Comet 103P/Hartley 2 in Support of NASA's EPOXI Mi...

Tue Feb 17 02:52:54 GMT 2009

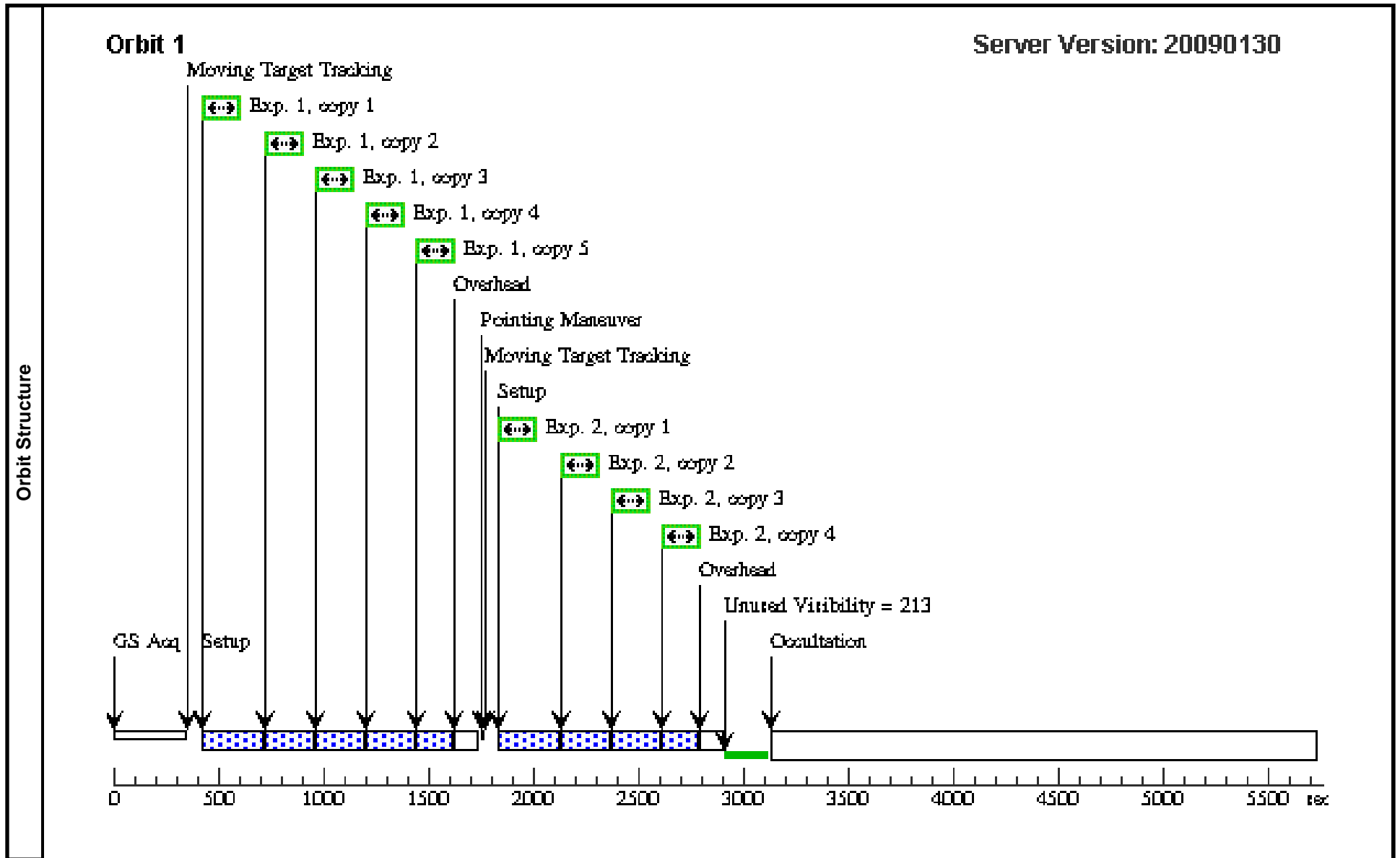
Visit	Proposal 11990, Visit 08, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: AFTER 07 BY 1.8 Orbits TO 2.2 Orbits									
	Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center		
	(1)	COMET-103P-HARTLEY2	TYPE=COMET,Q=1.0585118013889 59,E=0.6948695649929406,I=13.6175 0532380278,O=219.7741026974964, W=181.2322425726619,T=28-OCT- 2010:11:54:31,EQUINOX=J2000,EPO CH=01-NOV- 2008:00:00:00,A1=1.56775E-09,A2=- 2.725287E-10,A3=2.172315E-10					EARTH		
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(1) COMET-103P-HARTLEY2	WFPC2, IMAGE, PC1	F606W	CR-SPLIT=NO	POS TARG 0.000,0.000		160 Secs X 5 [=>(Copy 1)] [=>(Copy 2)] [=>(Copy 3)] [=>(Copy 4)] [=>(Copy 5)]	[1]
	2		(1) COMET-103P-HARTLEY2	WFPC2, IMAGE, PC1	F606W	CR-SPLIT=NO	POS TARG 0.249,0.249		160 Secs X 4 [=>(Copy 1)] [=>(Copy 2)] [=>(Copy 3)] [=>(Copy 4)]	[1]



Proposal 11990 - Visit 09 - Determining the Physical Properties of Comet 103P/Hartley 2 in Support of NASA's EPOXI Mi...

Tue Feb 17 02:52:54 GMT 2009

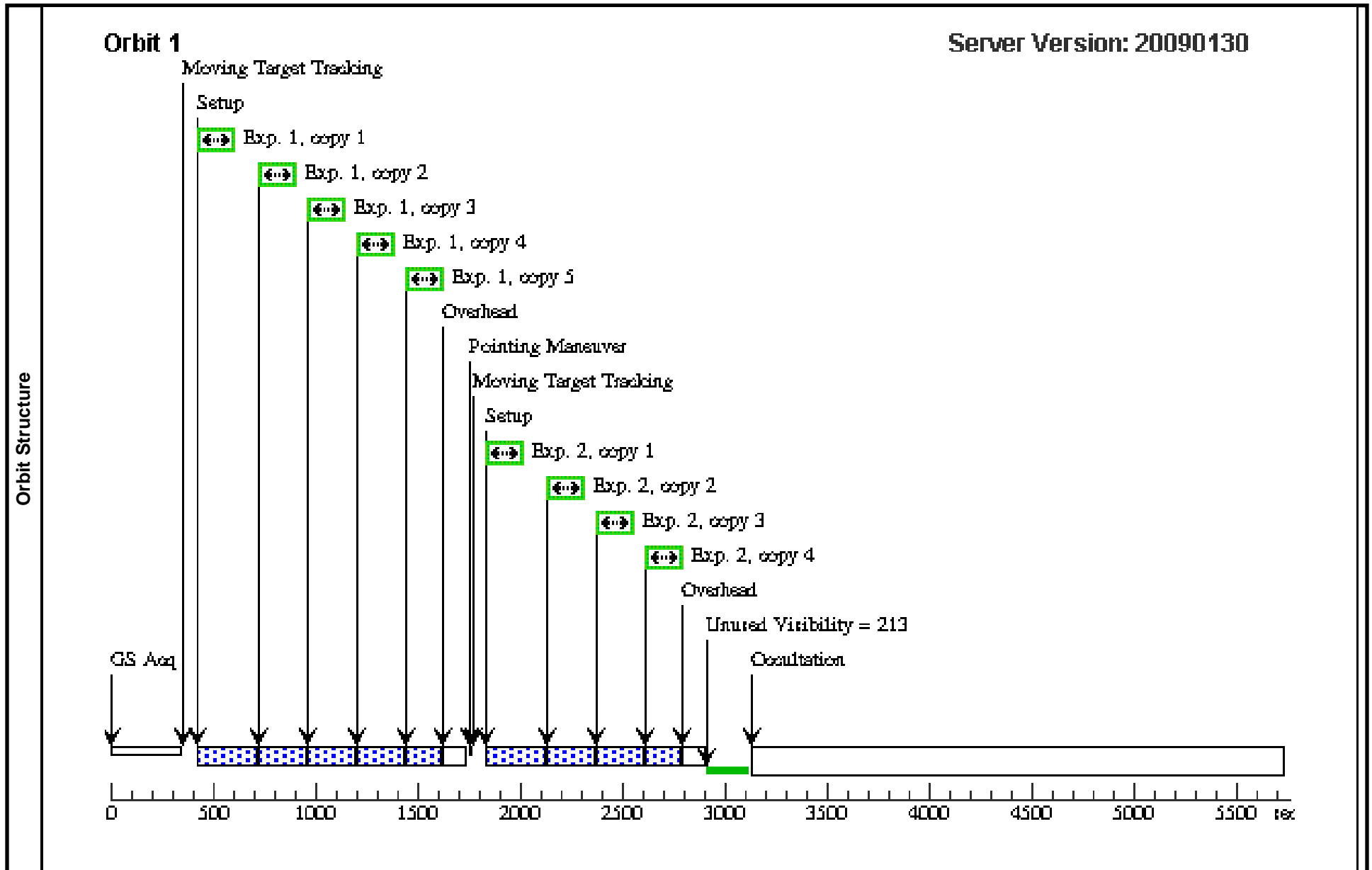
Visit	Proposal 11990, Visit 09, implementation									
	Diagnostic Status: No Diagnostics									
Solar System Targets	Scientific Instruments: WFPC2									
	Special Requirements: AFTER 08 BY 1.8 Orbits TO 2.2 Orbits									
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center				
(1)	COMET-103P-HARTLEY2	TYPE=COMET,Q=1.0585118013889 59,E=0.6948695649929406,I=13.6175 0532380278,O=219.7741026974964, W=181.2322425726619,T=28-OCT- 2010:11:54:31,EQUINOX=J2000,EPO CH=01-NOV- 2008:00:00:00,A1=1.56775E-09,A2=- 2.725287E-10,A3=2.172315E-10					EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(1) COMET-103P-HARTLEY2	WFPC2, IMAGE, PC1	F606W	CR-SPLIT=NO	POS TARG 0.000,0.000		160 Secs X 5 [=>(Copy 1)] [=>(Copy 2)] [=>(Copy 3)] [=>(Copy 4)] [=>(Copy 5)]	[1]
	2		(1) COMET-103P-HARTLEY2	WFPC2, IMAGE, PC1	F606W	CR-SPLIT=NO	POS TARG 0.249,0.249		160 Secs X 4 [=>(Copy 1)] [=>(Copy 2)] [=>(Copy 3)] [=>(Copy 4)]	[1]



Proposal 11990 - Visit 10 - Determining the Physical Properties of Comet 103P/Hartley 2 in Support of NASA's EPOXI Mi...

Tue Feb 17 02:52:54 GMT 2009

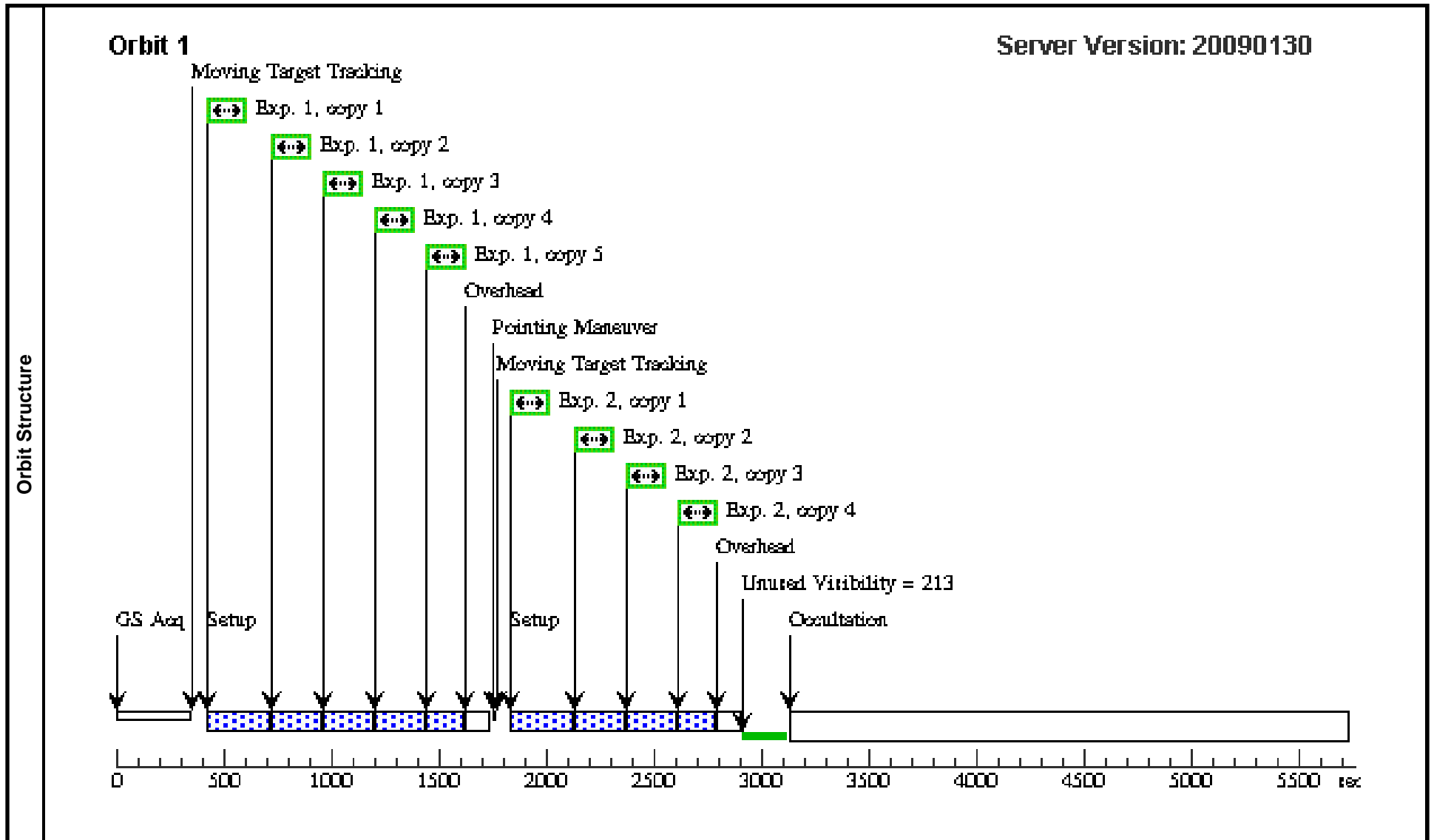
Visit	Proposal 11990, Visit 10, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: AFTER 09 BY 1.8 Orbits TO 2.2 Orbits									
	Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center		
	(1)	COMET-103P-HARTLEY2	TYPE=COMET,Q=1.0585118013889 59,E=0.6948695649929406,I=13.6175 0532380278,O=219.7741026974964, W=181.2322425726619,T=28-OCT- 2010:11:54:31,EQUINOX=J2000,EPO CH=01-NOV- 2008:00:00:00,A1=1.56775E-09,A2=- 2.725287E-10,A3=2.172315E-10					EARTH		
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(1) COMET-103P-HARTLEY2	WFPC2, IMAGE, PC1	F606W	CR-SPLIT=NO	POS TARG 0.000,0.000		160 Secs X 5 [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)]	[1]
2		(1) COMET-103P-HARTLEY2	WFPC2, IMAGE, PC1	F606W	CR-SPLIT=NO	POS TARG 0.249,0.249		160 Secs X 4 [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)]	[1]	



Proposal 11990 - Visit 11 - Determining the Physical Properties of Comet 103P/Hartley 2 in Support of NASA's EPOXI Mi...

Tue Feb 17 02:52:55 GMT 2009

Visit	Proposal 11990, Visit 11, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: AFTER 10 BY 1.8 Orbits TO 2.2 Orbits									
	Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center		
	(1)	COMET-103P-HARTLEY2	TYPE=COMET,Q=1.0585118013889 59,E=0.6948695649929406,I=13.6175 0532380278,O=219.7741026974964, W=181.2322425726619,T=28-OCT- 2010:11:54:31,EQUINOX=J2000,EPO CH=01-NOV- 2008:00:00:00,A1=1.56775E-09,A2=- 2.725287E-10,A3=2.172315E-10					EARTH		
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(1) COMET-103P-HARTLEY2	WFPC2, IMAGE, PC1	F606W	CR-SPLIT=NO	POS TARG 0.000,0.000		160 Secs X 5 [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)]	[1]
	2		(1) COMET-103P-HARTLEY2	WFPC2, IMAGE, PC1	F606W	CR-SPLIT=NO	POS TARG 0.249,0.249		160 Secs X 4 [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)]	[1]



Proposal 11990 - Visit 12 - Determining the Physical Properties of Comet 103P/Hartley 2 in Support of NASA's EPOXI Mi...

Tue Feb 17 02:52:55 GMT 2009

Visit	Proposal 11990, Visit 12, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: AFTER 11 BY 1.8 Orbits TO 2.2 Orbits									
	Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center		
	(1)	COMET-103P-HARTLEY2	TYPE=COMET,Q=1.058511801388959,E=0.6948695649929406,I=13.61750532380278,O=219.7741026974964,W=181.2322425726619,T=28-OCT-2010:11:54:31,EQUINOX=J2000,EPOCH=01-NOV-2008:00:00:00,A1=1.56775E-09,A2=-2.725287E-10,A3=2.172315E-10					EARTH		
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(1) COMET-103P-HARTLEY2	WFPC2, IMAGE, PC1	F606W	CR-SPLIT=NO	POS TARG 0.000,0.000		160 Secs X 5 [=>(Copy 1)] [=>(Copy 2)] [=>(Copy 3)] [=>(Copy 4)] [=>(Copy 5)]	[1]
2		(1) COMET-103P-HARTLEY2	WFPC2, IMAGE, PC1	F606W	CR-SPLIT=NO	POS TARG 0.249,0.249		160 Secs X 4 [=>(Copy 1)] [=>(Copy 2)] [=>(Copy 3)] [=>(Copy 4)]	[1]	

