



10884 - The Dynamical Structure of Ellipticals in the Coma and Abell 262 Clusters

Cycle: 15, Proposal Category: SNAP

(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) NGC-0679	WFPC2	1	17-Jan-2008 15:19:18.0	yes
02	(2) NGC-0712	WFPC2	1	17-Jan-2008 15:19:21.0	yes
03	(3) IC-0171	WFPC2	1	17-Jan-2008 15:19:23.0	yes
04	(4) NGC-0759	WFPC2	1	17-Jan-2008 15:19:25.0	yes
05	(5) NGC-0708	WFPC2	1	17-Jan-2008 15:19:26.0	yes
06	(6) NGC-0687	WFPC2	1	17-Jan-2008 15:19:28.0	yes
07	(7) UGC-01308	WFPC2	1	17-Jan-2008 15:19:29.0	yes
08	(8) GMP-756	WFPC2	1	17-Jan-2008 15:19:31.0	yes
09	(9) GMP-1176	WFPC2	1	17-Jan-2008 15:19:32.0	yes
10	(10) GMP-1990	WFPC2	1	17-Jan-2008 15:19:34.0	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>
11	(11) GMP-2440	WFPC2	1	17-Jan-2008 15:19:36.0	yes
12	(12) GMP-3414	WFPC2	1	17-Jan-2008 15:19:37.0	yes
13	(13) GMP-4822	WFPC2	1	17-Jan-2008 15:19:39.0	yes

13 Total Orbits Used

ABSTRACT

We propose to obtain images of 13 relatively luminous early type galaxies in the Coma cluster and Abell 262 for which we have already collected ground based major and minor axis spectra and images. The higher resolution HST images will enable us to study the central regions of these galaxies which is crucial to our dynamical modelling. The complete data set will allow us to perform a full dynamical analysis and to derive the dark matter content and distribution, the stellar orbital structure, and the stellar population properties of these objects, probing the predictions of galaxy formation models. The dynamical analysis will be performed using an up-to-date axi-symmetric orbit superposition code.

OBSERVING DESCRIPTION

We wish to obtain snapshot observations of the centers of 13 early-type galaxies, seven that are in the cluster Abell 262, and six in the Coma cluster. These would be used to construct light profiles that could be combined with our existing spectroscopic and imaging data in order to model the dynamical structures of these galaxies. We are thus proposing relatively short exposures of these bright objects with the WFPC2 - PC that could be matched in their outer parts with already available ground based imaging at a distance from the center of approximately 3 times the ground based PSF (typically 1.0 arcsec or a bit less). We would use the red waveband for which the F622W filter is a good match.

Adopting the de Vaucouleurs R to the 1/4th profile for these elliptical galaxies and the values of m_T , the total magnitude, and R_e , the effective radius, in the Cousins R-band given in Saglia et al. (1997), we can estimate the surface brightness of each galaxy as a function of radius. Using the galaxy NGC 0708 in the target list as an example, we find that it has a

RC= 14.13 mag/arcsec² at $r = 0$ and 18.71 mag/arcsec²
at $r = 3.0$ arcsecs. We would employ the default two point line dither
pattern. Using images of similar galaxies in the HST archives with the WFPC2-PC (e.g. proposal
ID 5997), two 300 sec exposures is expected to give good signal-to-noise.

We would thus use the default WFPC2 linear dither pattern and obtain two 300 sec exposures.
Consequently we expect the total time required per object to be about 23 minutes with the breakdown as
follows:

Guide star acquisition time: 6 mins.
target acquisition: 0 mins.
instrument overhead time: 4.0 mins. (first exposure) + 2.5 mins. (second exposure)
total exposure: 600 secs.
300 secs at first dither point
340 secs at 2nd dither point
SAM for dither: 30 secs.

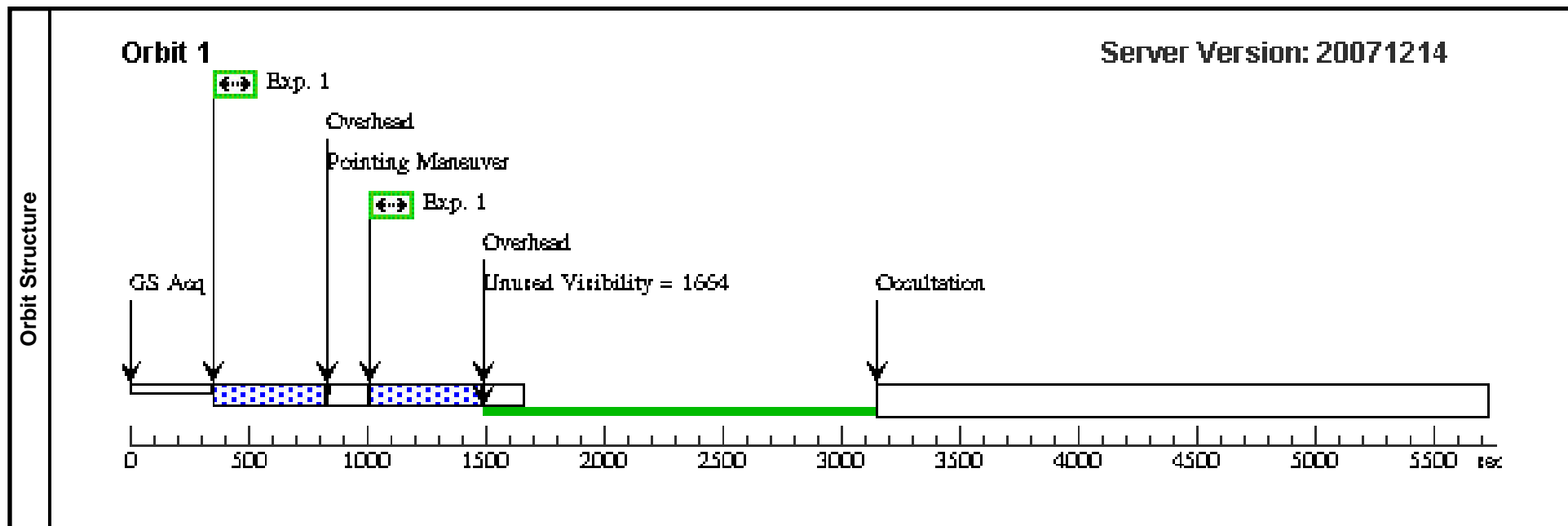
Total time per visit: 1420 sec.

We have checked the observability of these targets with the two gyro mode using the Available Science Time and Orientation Tool. Orientation is not critical for these images. The Abell 262 galaxies all lie near $\alpha = 1^{\text{h}}54^{\text{m}}$, $\delta = +36.0$, all targets would be observable for more than 30 minutes for the periods July 1 - November 1 with the exception of September 16 in 2006 and July 1 - November 12 with the exception of October 5 - 17 in 2007. The Coma galaxies start to be visible in the middle of November down to the end of April with some impossible dates in April.

Proposal 10884 - Visit 01 - The Dynamical Structure of Ellipticals in the Coma and Abell 262 Clusters

Thu Jan 17 20:19:42 GMT 2008

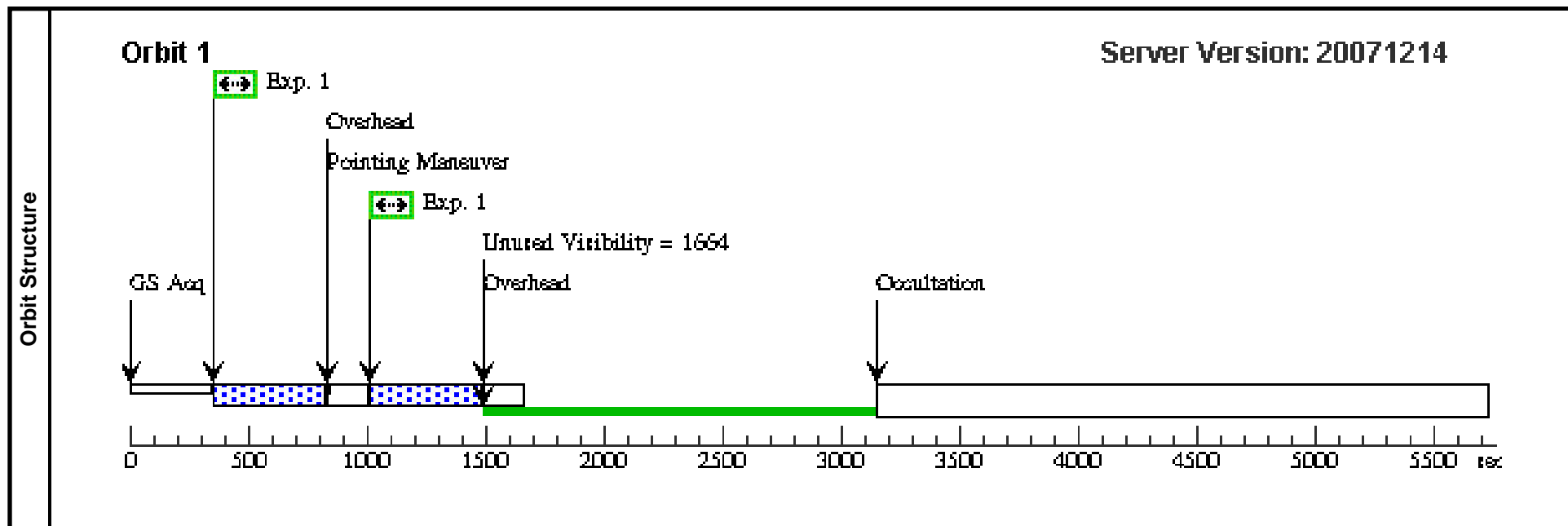
Visit	Proposal 10884, Visit 01, implementation Priority: M Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: (none)									
	Patterns	#	Primary Pattern				Secondary Pattern			
(1)		Pattern Type=WFPC2-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.3535 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=45.0 Angle Between Sides= Center Pattern=false					(1)		
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	NGC-0679	RA: 01 49 43.8000 (27.4325000d) Dec: +35 47 8.00 (35.78556d) Equinox: J2000		V=13.39+/-0.15	Reference Frame: NED				
<i>Comments: This object was generated by the targetselector and retrieved from the NED database.</i>										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(1) NGC-0679	WFPC2, IMAGE, PC1-FIX	F622W	CR-SPLIT=NO		Pattern 1-1 (1)	300.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]	



Proposal 10884 - Visit 02 - The Dynamical Structure of Ellipticals in the Coma and Abell 262 Clusters

Thu Jan 17 20:19:43 GMT 2008

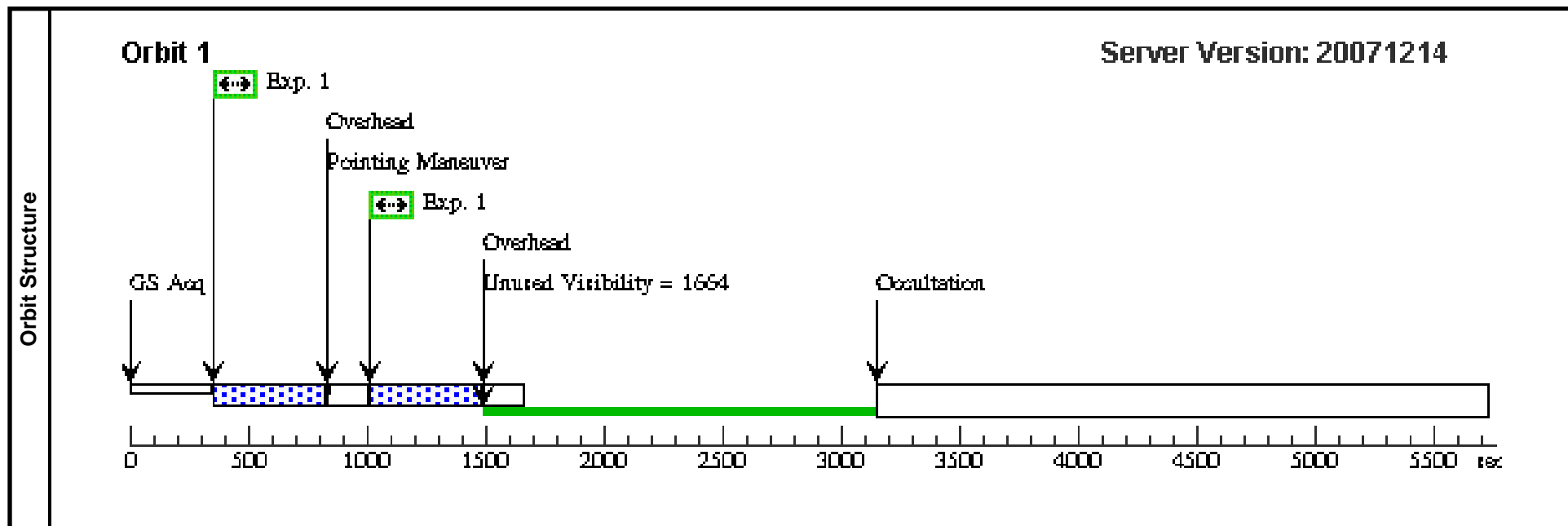
Visit	Proposal 10884, Visit 02, implementation Priority: M Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: (none)									
	Patterns	#	Primary Pattern				Secondary Pattern			
(1)		Pattern Type=WFPC2-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.3535 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=45.0 Angle Between Sides= Center Pattern=false					(1)		
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(2)	NGC-0712	RA: 01 53 8.4000 (28.2850000d) Dec: +36 49 11.00 (36.81972d) Equinox: J2000		V=13.6+/-0.15	Reference Frame: NED				
<i>Comments: This object was generated by the targetselector and retrieved from the NED database.</i>										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(2) NGC-0712	WFPC2, IMAGE, PC1-FIX	F622W	CR-SPLIT=NO			Pattern 1-1 (1)	300.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]



Proposal 10884 - Visit 03 - The Dynamical Structure of Ellipticals in the Coma and Abell 262 Clusters

Thu Jan 17 20:19:43 GMT 2008

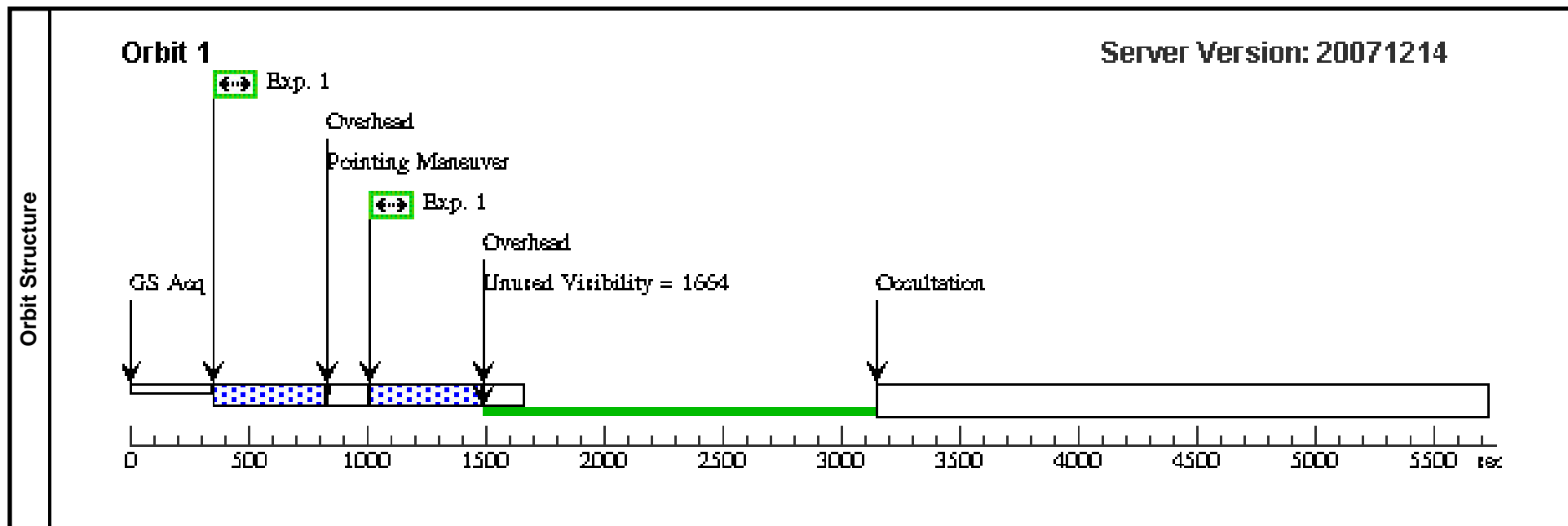
Visit	Proposal 10884, Visit 03, implementation Priority: L Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: (none)										
	Patterns	#	Primary Pattern				Secondary Pattern				Exposures
(1)		Pattern Type=WFPC2-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.3535 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=45.0 Angle Between Sides= Center Pattern=false					(1)			
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections		Fluxes	Miscellaneous				
	(3)	IC-0171	RA: 01 55 10.3000 (28.7929167d) Dec: +35 16 54.00 (35.28167d) Equinox: J2000			V=12.44+/-0.15	Reference Frame: NED				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1	(3) IC-0171	WFPC2, IMAGE, PC1-FIX	F622W	CR-SPLIT=NO			Pattern 1-1 (1)	300.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]	



Proposal 10884 - Visit 04 - The Dynamical Structure of Ellipticals in the Coma and Abell 262 Clusters

Thu Jan 17 20:19:43 GMT 2008

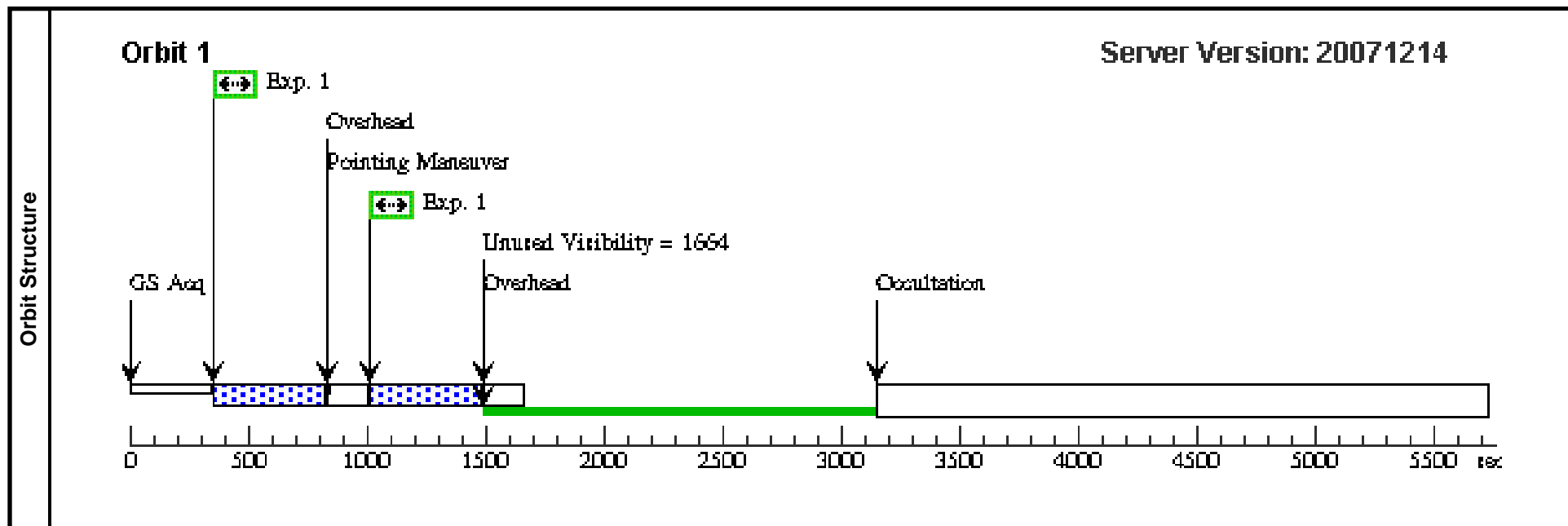
Visit	Proposal 10884, Visit 04, implementation Priority: H Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: (none)									
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(1)		Pattern Type=WFPC2-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.3535 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=45.0 Angle Between Sides= Center Pattern=false					(1)		
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(4)	NGC-0759	RA: 01 57 50.3000 (29.4595833d) Dec: +36 20 35.00 (36.34306d) Equinox: J2000		V=12.84+/-0.15	Reference Frame: NED				
<i>Comments: This object was generated by the targetselector and retrieved from the NED database.</i>										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(4) NGC-0759	WFPC2, IMAGE, PC1-FIX	F622W	CR-SPLIT=DEF		Pattern 1-1 (1)	300.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]



Proposal 10884 - Visit 05 - The Dynamical Structure of Ellipticals in the Coma and Abell 262 Clusters

Thu Jan 17 20:19:44 GMT 2008

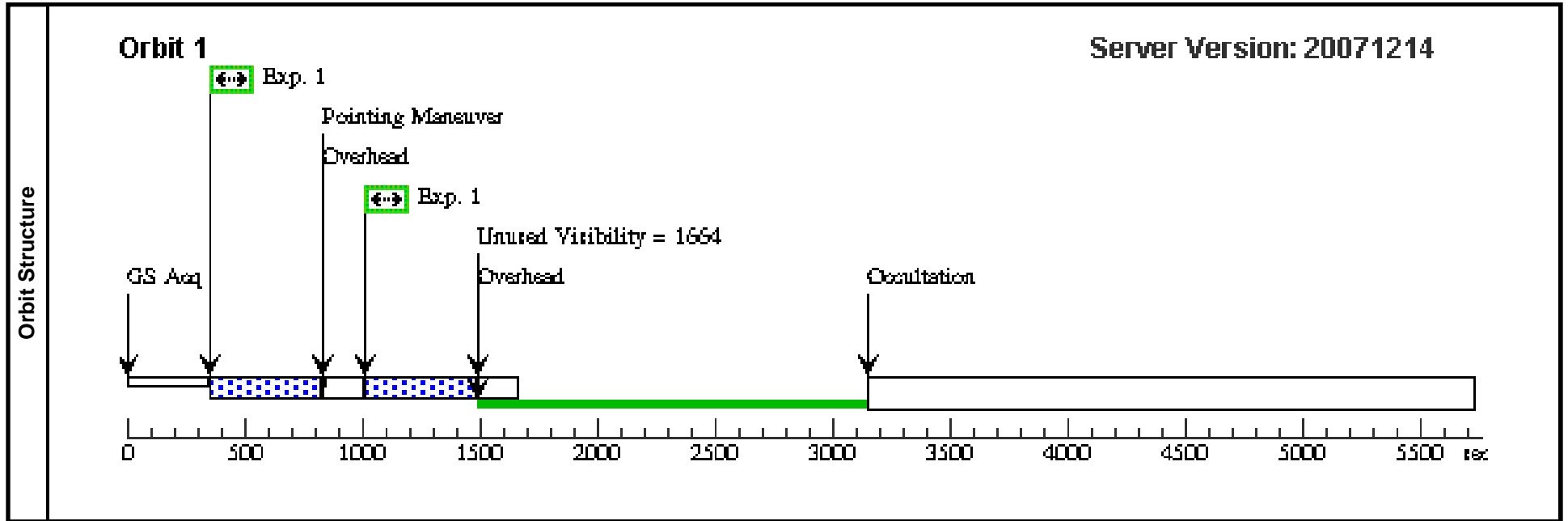
Visit	Proposal 10884, Visit 05, implementation Priority: H Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: (none)										
	Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
(1)		Pattern Type=WFPC2-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.3535 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=45.0 Angle Between Sides= Center Pattern=false						(1)		
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections		Fluxes	Miscellaneous				
	(5)	NGC-0708	RA: 01 52 46.4500 (28.1935417d) Dec: +36 09 7.00 (36.15194d) Equinox: J2000			V=12.23+/-1.5	Reference Frame: NED				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1	(5) NGC-0708	WFPC2, IMAGE, PC1-FIX	F622W	CR-SPLIT=NO			Pattern 1-1 (1)	300.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]		[1]



Proposal 10884 - Visit 06 - The Dynamical Structure of Ellipticals in the Coma and Abell 262 Clusters

Thu Jan 17 20:19:45 GMT 2008

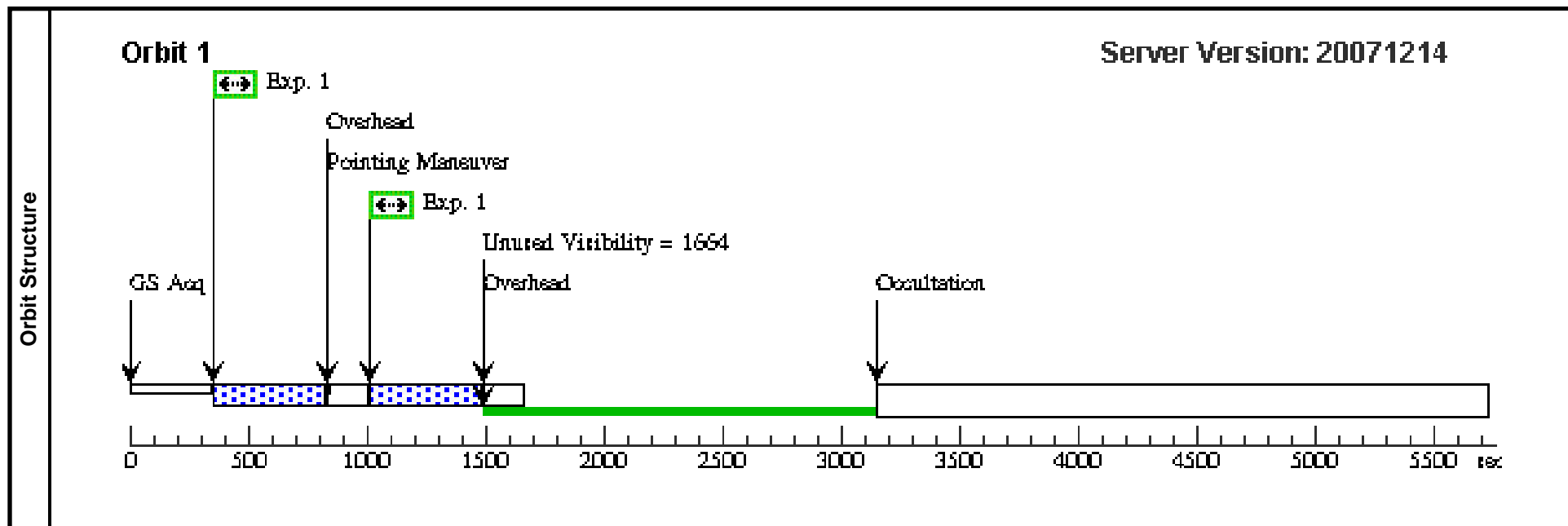
Visit	Proposal 10884, Visit 06, implementation Priority: M Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: (none)									
	Patterns	#	Primary Pattern				Secondary Pattern			
(1)		Pattern Type=WFPC2-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.3535 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=45.0 Angle Between Sides= Center Pattern=false					(1)		
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(6)	NGC-0687	RA: 01 50 33.2000 (27.6383333d) Dec: +36 22 15.00 (36.37083d) Equinox: J2000		V=12.77+/-0.15	Reference Frame: NED				
<i>Comments: This object was generated by the targetselector and retrieved from the NED database.</i>										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(6) NGC-0687	WFPC2, IMAGE, PC1-FIX	F622W	CR-SPLIT=DEF		Pattern 1-1 (1)	300.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]



Proposal 10884 - Visit 07 - The Dynamical Structure of Ellipticals in the Coma and Abell 262 Clusters

Thu Jan 17 20:19:45 GMT 2008

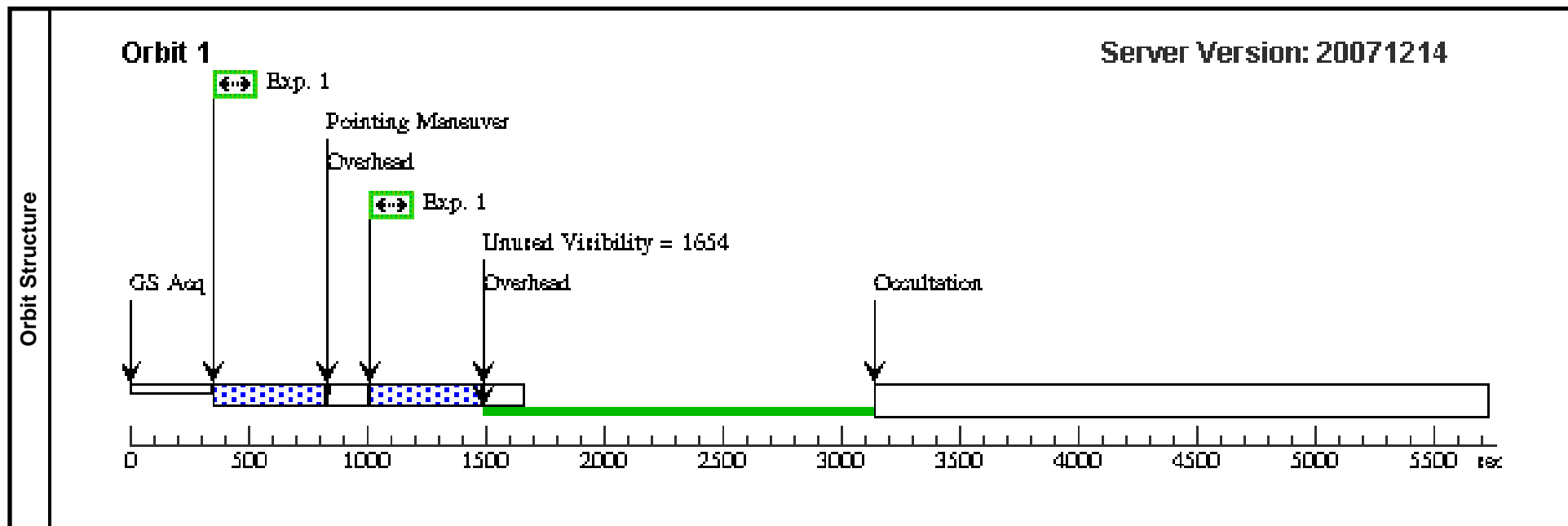
Visit	Proposal 10884, Visit 07, implementation Priority: L Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: (none)										
	Patterns	#	Primary Pattern				Secondary Pattern				Exposures
(1)		Pattern Type=WFPC2-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.3535 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=45.0 Angle Between Sides= Center Pattern=false					(1)			
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections		Fluxes	Miscellaneous				
	(7)	UGC-01308	RA: 01 50 51.2000 (27.7133333d) Dec: +36 16 33.00 (36.27583d) Equinox: J2000			V=12.3+/-0.3	Reference Frame: NED				
<i>Comments: This object was generated by the targetselector and retrieved from the NED database.</i>											
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1		(7) UGC-01308	WFPC2, IMAGE, PC1-FIX	F622W	CR-SPLIT=DEF		Pattern 1-1 (1)	300.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]		[1]



Proposal 10884 - Visit 08 - The Dynamical Structure of Ellipticals in the Coma and Abell 262 Clusters

Thu Jan 17 20:19:46 GMT 2008

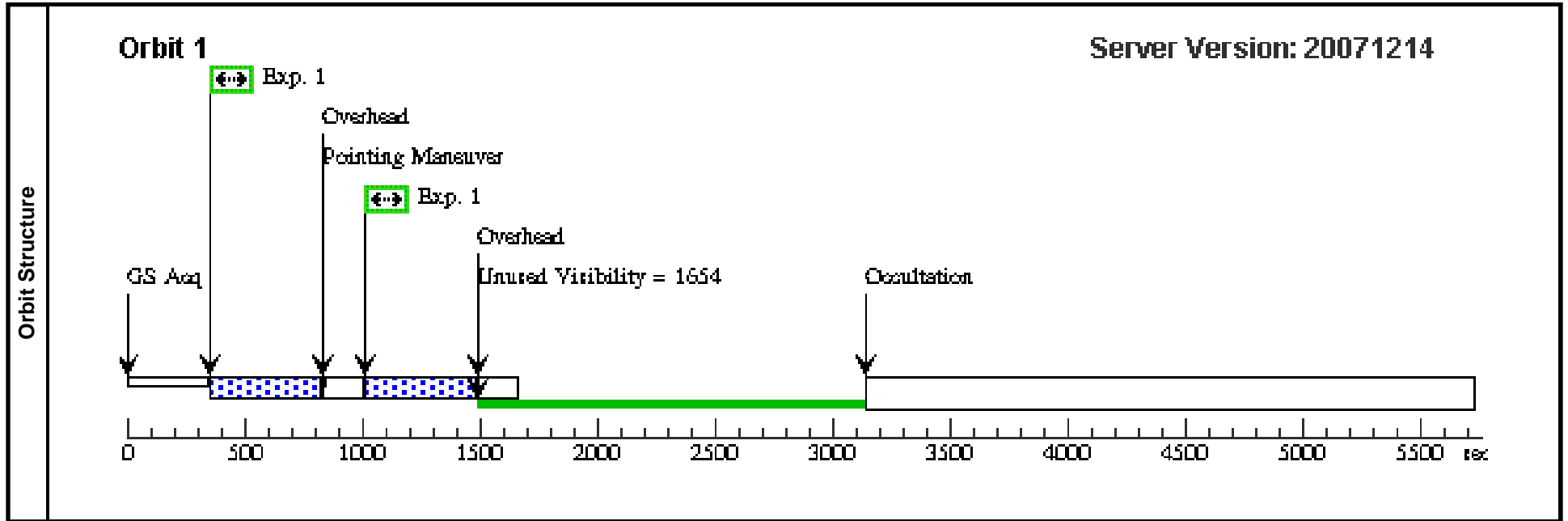
Visit	Proposal 10884, Visit 08, implementation Priority: H Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: (none)										
	Patterns	#	Primary Pattern				Secondary Pattern				Exposures
(1)		Pattern Type=WFPC2-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.3535 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=45.0 Angle Between Sides= Center Pattern=false					(1)			
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections		Fluxes	Miscellaneous				
	(8)	GMP-756	RA: 13 03 50.0100 (195.9583750d) Dec: +28 11 6.90 (28.18525d) Equinox: J2000			V=13.9+/-0.2	Reference Frame: NED				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1	(8) GMP-756	WFPC2, IMAGE, PC1-FIX	F622W	CR-SPLIT=NO			Pattern 1-1 (1)	300.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]	



Proposal 10884 - Visit 09 - The Dynamical Structure of Ellipticals in the Coma and Abell 262 Clusters

Thu Jan 17 20:19:46 GMT 2008

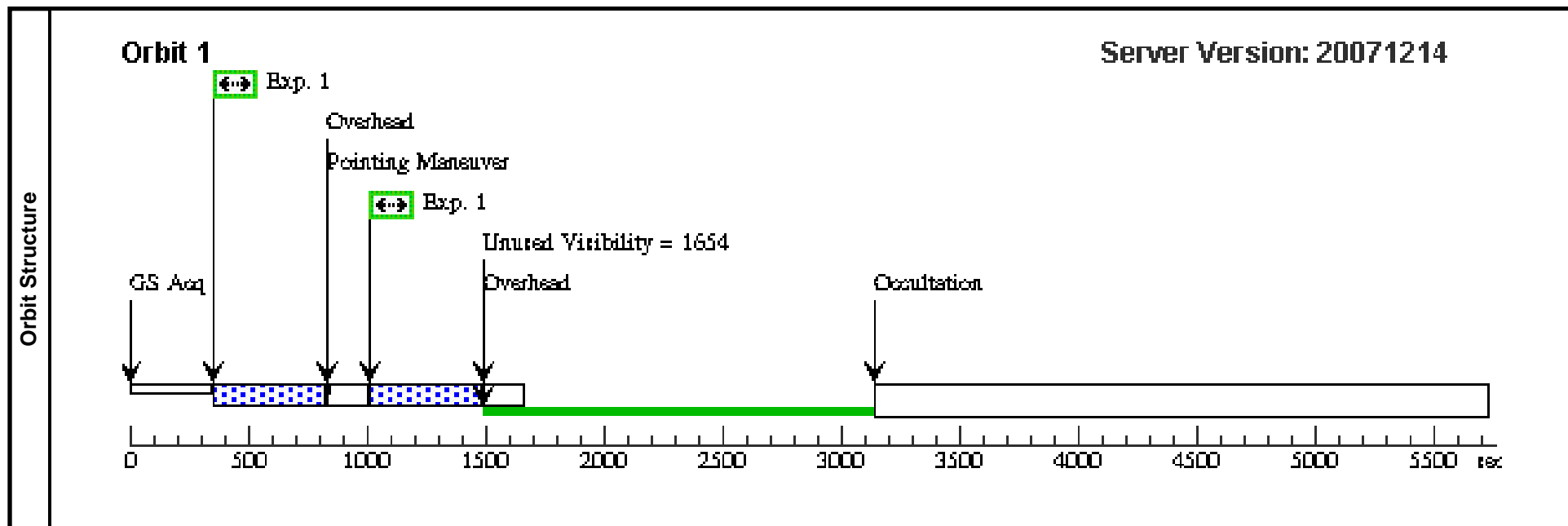
Visit	Proposal 10884, Visit 09, implementation Priority: H Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: (none)										
	Patterns	#	Primary Pattern				Secondary Pattern				Exposures
(1)		Pattern Type=WFPC2-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.3535 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=45.0 Angle Between Sides= Center Pattern=false					(1)			
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections		Fluxes	Miscellaneous				
	(9)	GMP-1176	RA: 13 03 0.7900 (195.7532917d) Dec: +28 01 58.30 (28.03286d) Equinox: J2000			V=14.7+/-0.2	Reference Frame: NED				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1		(9) GMP-1176	WFPC2, IMAGE, PC1-FIX	F622W	CR-SPLIT=DEF		Pattern 1-1 (1)	300.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]	



Proposal 10884 - Visit 10 - The Dynamical Structure of Ellipticals in the Coma and Abell 262 Clusters

Thu Jan 17 20:19:47 GMT 2008

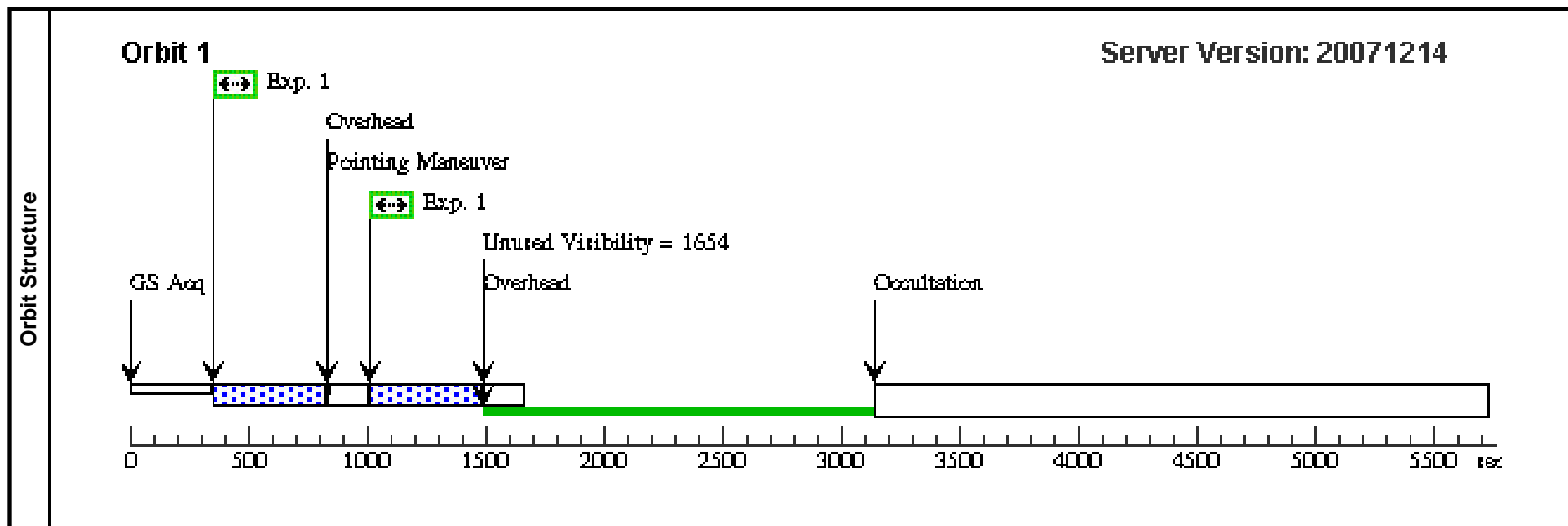
Visit	Proposal 10884, Visit 10, implementation Priority: M Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: (none)										
	Patterns	#	Primary Pattern				Secondary Pattern				Exposures
(1)		Pattern Type=WFPC2-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.3535 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=45.0 Angle Between Sides= Center Pattern=false					(1)			
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes	Miscellaneous			
	(10)	GMP-1990	RA: 13 01 33.6400 (195.3901667d) Dec: +29 07 49.60 (29.13044d) Equinox: J2000				V=14.3+/-0.2	Reference Frame: NED			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1	(10) GMP-1990	WFPC2, IMAGE, PC1-FIX	F622W	CR-SPLIT=DEF			Pattern 1-1 (1)	300.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]	



Proposal 10884 - Visit 11 - The Dynamical Structure of Ellipticals in the Coma and Abell 262 Clusters

Thu Jan 17 20:19:47 GMT 2008

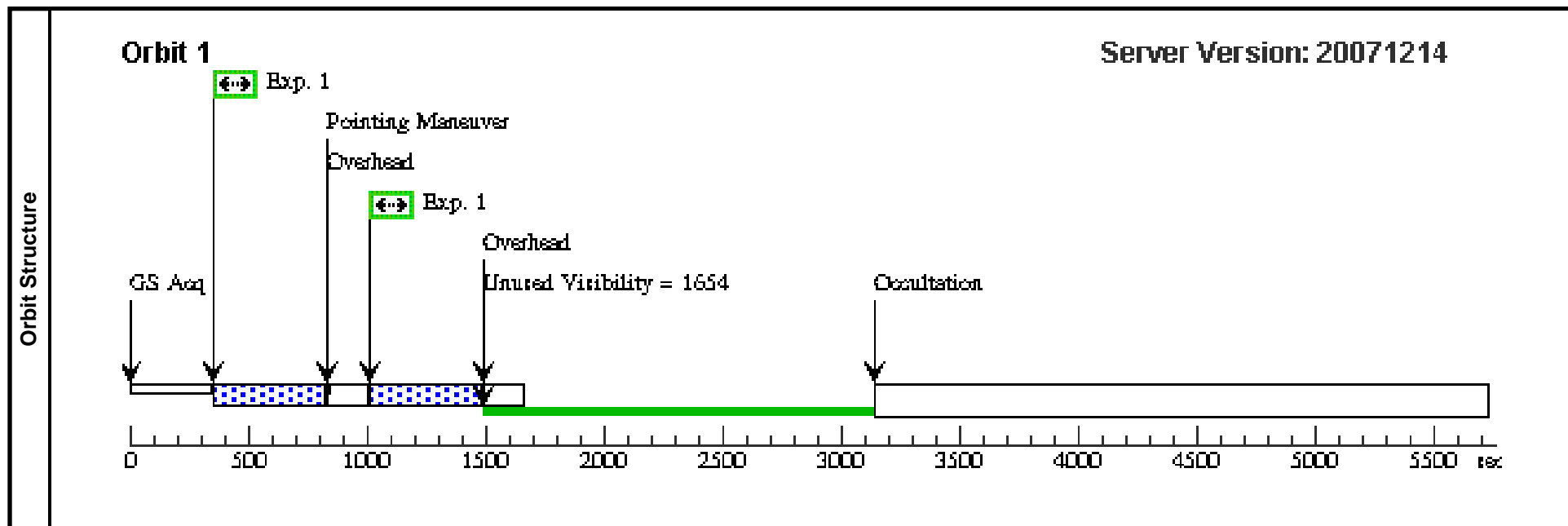
Visit	Proposal 10884, Visit 11, implementation Priority: M Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: (none)										
	Patterns	#	Primary Pattern				Secondary Pattern				Exposures
(1)		Pattern Type=WFPC2-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.3535 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=45.0 Angle Between Sides= Center Pattern=false					(1)			
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes	Miscellaneous			
	(11)	GMP-2440	RA: 13 00 48.6500 (195.2027083d) Dec: +28 05 25.80 (28.09050d) Equinox: J2000				V=14.9+/-0.2	Reference Frame: NED			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1	(11) GMP-2440	WFPC2, IMAGE, PC1-FIX	F622W	CR-SPLIT=DEF			Pattern 1-1 (1)	300.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]	



Proposal 10884 - Visit 12 - The Dynamical Structure of Ellipticals in the Coma and Abell 262 Clusters

Thu Jan 17 20:19:47 GMT 2008

Visit	Proposal 10884, Visit 12, implementation Priority: L Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: (none)										
	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)			
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections		Fluxes	Miscellaneous				
	(12)	GMP-3414	RA: 12 59 29.9500 (194.8747917d) Dec: +27 57 22.80 (27.95633d) Equinox: J2000			V=15+/-0.2	Reference Frame: NED				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1	(12) GMP-3414	WFPC2, IMAGE, PC1-FIX	F622W	CR-SPLIT=DEF			Pattern 1-1 (1)	300.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]	



Proposal 10884 - Visit 13 - The Dynamical Structure of Ellipticals in the Coma and Abell 262 Clusters

Thu Jan 17 20:19:48 GMT 2008

Visit	Proposal 10884, Visit 13, implementation Priority: L Diagnostic Status: No Diagnostics Scientific Instruments: WFPC2 Special Requirements: (none)										
	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)			
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes	Miscellaneous			
	(13)	GMP-4822	RA: 12 57 32.0500 (194.3835417d) Dec: +28 28 35.30 (28.47647d) Equinox: J2000				V=13.5+/-0.2	Reference Frame: NED			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1	(13) GMP-4822	WFPC2, IMAGE, PC1-FIX	F622W	CR-SPLIT=DEF			Pattern 1-1 (1)	300.0 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]	

