10911 - Calibration of ACS F814W Surface Brightness Fluctuations

Cycle: 15, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

Name	*Institution*	*E-Mail*
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VISITS

Visit	*Targets*	*Configurations*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) NGC1374	ACS/WFC	1	15-May-2006 22:04:25.0	yes
02	(2) NGC1427	ACS/WFC	1	15-May-2006 22:04:31.0	yes
03	(3) IC2006	ACS/WFC	1	15-May-2006 22:04:36.0	yes
04	(4) NGC1380	ACS/WFC	1	15-May-2006 22:04:39.0	yes
05	(5) NGC1399	ACS/WFC	1	15-May-2006 22:04:43.0	yes
06	(6) NGC1404	ACS/WFC	1	15-May-2006 22:04:47.0	yes

6 Total Orbits Used

ABSTRACT

The surface brightness fluctuations (SBF) method has emerged as the primary distance indicator for mapping local large-scale structures (Virgo, Fornax), as well as the velocity field out to nearly 15,000 km/s ($z < 0.05$). This is because other precision distance indicators either lack the requisite depth (Cepheids, TRGB) or are too rare for adequate sampling (supernovae), while more traditional methods (Tully-Fisher, fundamental plane) lack the necessary precision. The SBF method is now being used with great success in several major ACS Wide Field Camera programs. However, whereas the band of choice for the nearby structure studies has been F850LP, for the distant large-scale flow studies it is F814W because of its much greater throughput. As a result, the current calibration for the more distant studies is inadequate. We propose to establish the first systematic calibration of the SBF method in the important F814W ACS WFC bandpass. We will do this by measuring SBF in an optimized sample of galaxies in the nearby compact Fornax cluster. Given the large amount of effort and HST time being dedicated to F814W SBF measurements, it is imperative that we correct this outstanding calibration problem while time remains. For an extremely modest expenditure of orbits, we will remove a significant systematic error and vastly improve the overall accuracy of the ongoing ACS F814W SBF work. These data will also greatly enhance the legacy value of the HST archive for future SBF studies.

OBSERVING DESCRIPTION

We will observe each target galaxy for one orbit with the ACS/WFC. We take three dithered 408-second exposures in F814W using a 3-point dither line pattern, followed by two dithered 340-second exposures in F475W using a 2-point dither pattern. The orientation of target 1 is constrained so as to include both NGC1374 and its close neighbor NGC1375, which will also be useful for our calibration. Several of the other targets have their orientations constrained so that bright nearby stars do not land at the edge of (or just off) the field-of-view, since we have found that bright stars in these locations can create an enormous amount of scattered light, and thus greatly diminish the data quality.

Visit

Proposal 10911, Visit 01 Tue May 16 02:04:49 GMT 2006

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: ORIENT 302.0D TO 321.0 D

Patterns

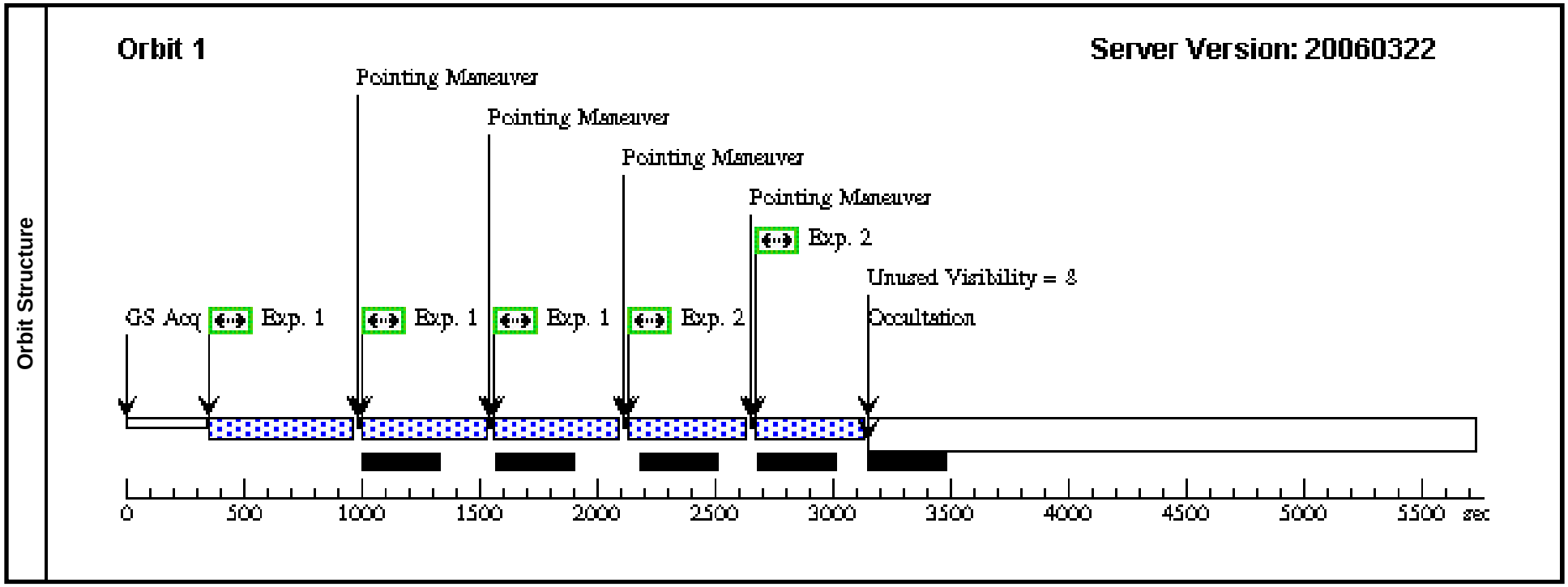
#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=1.4 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.3 Angle Between Sides= Center Pattern=false		(1)
(2)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=2.8 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.3 Angle Between Sides= Center Pattern=false		(2)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	NGC1374	RA: 03 35 16.1000 (53.8170833d) Dec: -35 14 31.00 (-35.24194d) Equinox: J2000		V=11.0+/-0.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	F814 exp on N1374	(1) NGC1374	ACS/WFC, ACCUM, WFC	F814W	CR-SPLIT=NO		Pattern 1-1 (1)	1230.0 Secs	
								[==>408.0 Secs (Pattern 1)] *[==>408.0 Secs (Pattern 2)]* *[==>408.0 Secs (Pattern 3)]*	***[1]***
2	F475 exp on N1374	(1) NGC1374	ACS/WFC, ACCUM, WFC	F475W	CR-SPLIT=NO		Pattern 2-2 (2)	680.0 Secs	
								[==>340.0 Secs (Pattern 1)] *[==>340.0 Secs (Pattern 2)]*	***[1]***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Server Version: 20060322
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Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Exp. 2
Unused Visibility = 8
GS Acq
Exp. 1
Exp. 1
Exp. 1
Exp. 2
Occultation
0
500
1000
1500
2000
2500
3000
3500
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4500
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5500
sec

Visit

Proposal 10911, Visit 02 Tue May 16 02:04:49 GMT 2006

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: ORIENT 221.0D TO 289.0 D; ORIENT 20.0D TO 140.0 D

Patterns

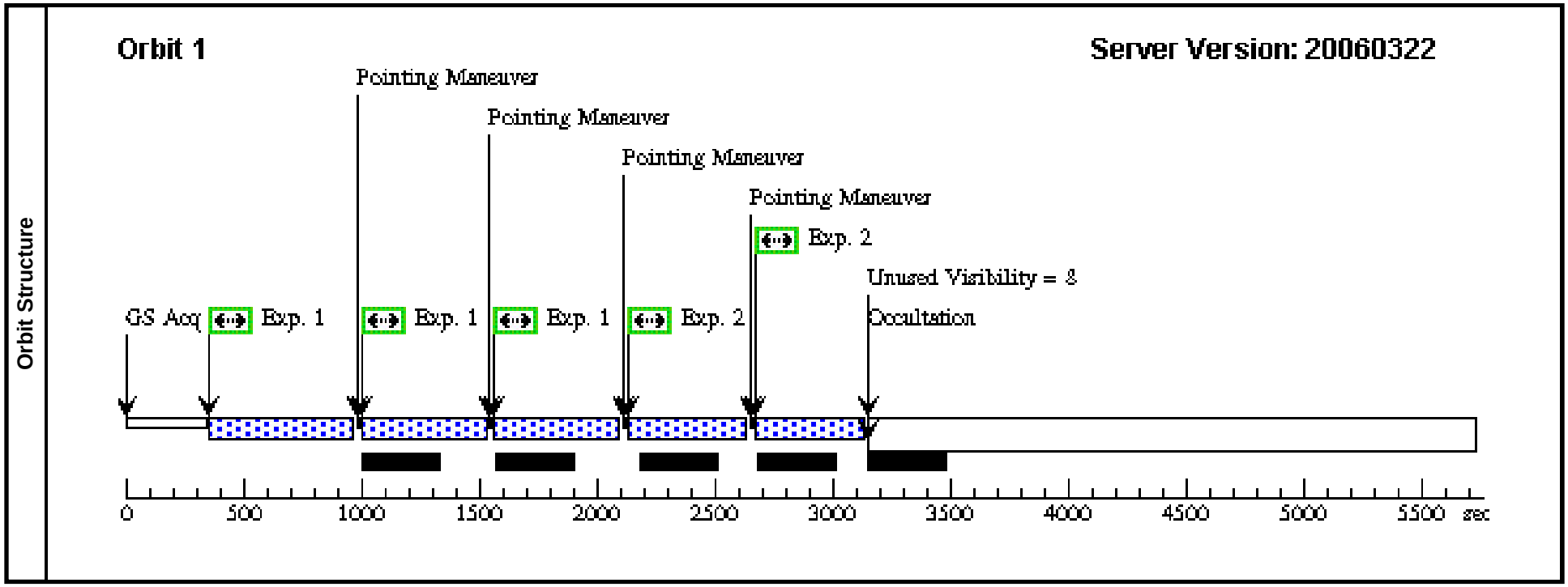
#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=1.4 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.3 Angle Between Sides= Center Pattern=false		(1)
(2)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=2.8 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.3 Angle Between Sides= Center Pattern=false		(2)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	NGC1427	RA: 03 42 19.4000 (55.5808333d) Dec: -35 23 34.00 (-35.39278d) Equinox: J2000		V=10.7+/-0.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	F814 exp on N1427	(2) NGC1427	ACS/WFC, ACCUM, WFC	F814W	CR-SPLIT=NO	POS TARG 2,18	Pattern 1-1 (1)	1230.0 Secs	
								[==>408.0 Secs (Pattern 1)] *[==>408.0 Secs (Pattern 2)]* *[==>408.0 Secs (Pattern 3)]*	***[1]***
2	F475 exp on N1427	(2) NGC1427	ACS/WFC, ACCUM, WFC	F475W	CR-SPLIT=NO	POS TARG 2,18	Pattern 2-2 (2)	680.0 Secs	
								[==>340.0 Secs (Pattern 1)] *[==>340.0 Secs (Pattern 2)]*	***[1]***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Server Version: 20060322
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Pointing Maneuver
Pointing Maneuver
Exp. 2
Unused Visibility = &
GS Acq
Exp. 1
Exp. 1
Exp. 1
Exp. 2
Occultation
0
500
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4500
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5500
sec

Visit

Proposal 10911, Visit 03 Tue May 16 02:04:50 GMT 2006

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: ORIENT 308.0D TO 210.0 D; ORIENT 236.0D TO 272.0 D

Patterns

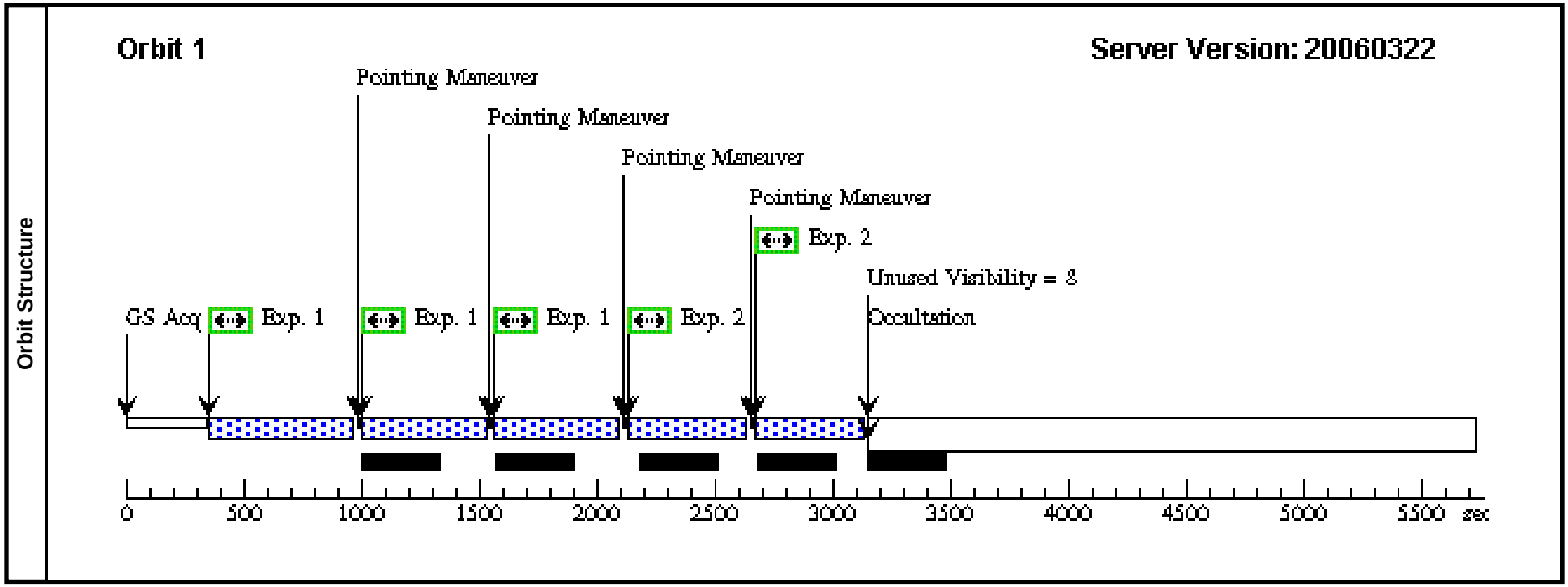
#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=1.4 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.3 Angle Between Sides= Center Pattern=false		(1)
(2)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=2.8 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.3 Angle Between Sides= Center Pattern=false		(2)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	IC2006	RA: 03 54 28.4000 (58.6183333d) Dec: -35 58 2.00 (-35.96722d) Equinox: J2000		V=11.2+/-0.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	F814 exp on I2006	(3) IC2006	ACS/WFC, ACCUM, WFC	F814W	CR-SPLIT=NO	POS TARG 2,18	Pattern 1-1 (1)	1230.0 Secs	
								[==>408.0 Secs (Pattern 1)] *[==>408.0 Secs (Pattern 2)]* *[==>408.0 Secs (Pattern 3)]*	***[1]***
2	F475 exp on I2006	(3) IC2006	ACS/WFC, ACCUM, WFC	F475W	CR-SPLIT=NO	POS TARG 2,18	Pattern 2-2 (2)	680.0 Secs	
								[==>340.0 Secs (Pattern 1)] *[==>340.0 Secs (Pattern 2)]*	***[1]***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Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Exp. 2
Unused Visibility = 8
GS Acq
Exp. 1
Exp. 1
Exp. 1
Exp. 2
Occultation
0
500
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sec

Visit

Proposal 10911, Visit 04 Tue May 16 02:04:50 GMT 2006

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: ORIENT 63.0D TO 120.0 D; ORIENT 244.0D TO 300.0 D

Patterns

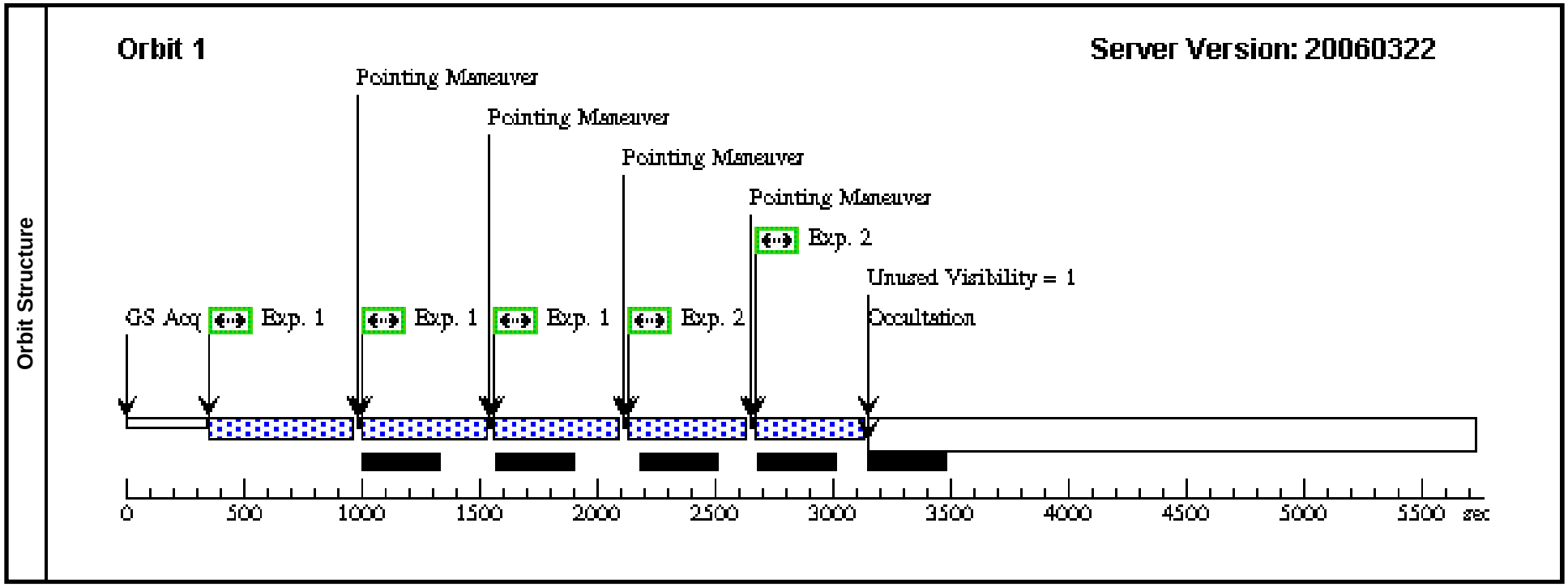
#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=1.4 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.3 Angle Between Sides= Center Pattern=false		(1)
(2)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=2.8 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.3 Angle Between Sides= Center Pattern=false		(2)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	NGC1380	RA: 03 36 27.6000 (54.1150000d) Dec: -34 58 34.00 (-34.97611d) Equinox: J2000		V=10.2+/-0.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	F814 exp on N1380	(4) NGC1380	ACS/WFC, ACCUM, WFC	F814W	CR-SPLIT=NO	POS TARG 2,20	Pattern 1-1 (1)	1230.0 Secs	
								[==>408.0 Secs (Pattern 1)] *[==>408.0 Secs (Pattern 2)]* *[==>408.0 Secs (Pattern 3)]*	***[1]***
2	F475 exp on N1380	(4) NGC1380	ACS/WFC, ACCUM, WFC	F475W	CR-SPLIT=NO	POS TARG 2,20	Pattern 2-2 (2)	680.0 Secs	
								[==>340.0 Secs (Pattern 1)] *[==>340.0 Secs (Pattern 2)]*	***[1]***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Unused Visibility = 1
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Exp. 1
Exp. 1
Exp. 1
Exp. 2
Occultation
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Visit

Proposal 10911, Visit 05 Tue May 16 02:04:51 GMT 2006

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: (none)

Patterns

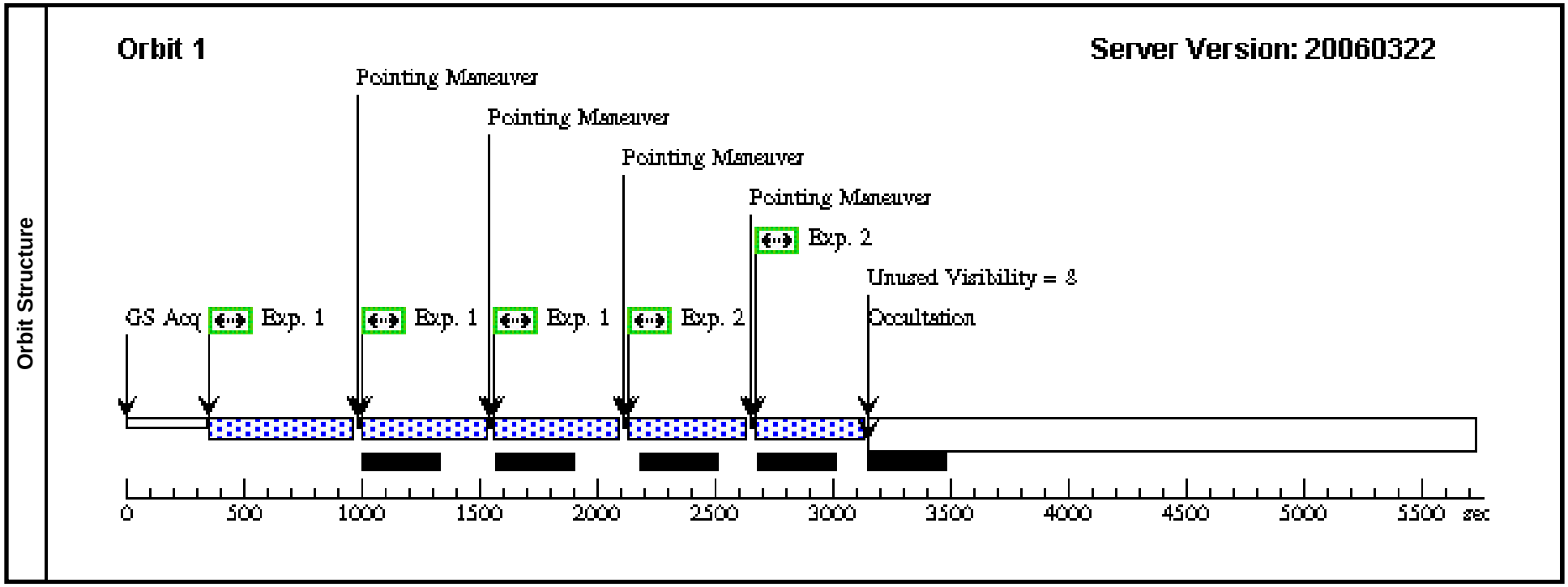
#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=1.4 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.3 Angle Between Sides= Center Pattern=false		(1)
(2)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=2.8 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.3 Angle Between Sides= Center Pattern=false		(2)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(5)	NGC1399	RA: 03 38 29.1000 (54.6212500d) Dec: -35 27 3.00 (-35.45083d) Equinox: J2000		V=9.0+/-0.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	F814 exp on N1399	(5) NGC1399	ACS/WFC, ACCUM, WFC	F814W	CR-SPLIT=NO	POS TARG 2,18	Pattern 1-1 (1)	1230.0 Secs	
								[==>408.0 Secs (Pattern 1)] *[==>408.0 Secs (Pattern 2)]* *[==>408.0 Secs (Pattern 3)]*	***[1]***
2	F475 exp on N1399	(5) NGC1399	ACS/WFC, ACCUM, WFC	F475W	CR-SPLIT=NO	POS TARG 2,18	Pattern 2-2 (2)	680.0 Secs	
								[==>340.0 Secs (Pattern 1)] *[==>340.0 Secs (Pattern 2)]*	***[1]***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Unused Visibility = &
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Occultation
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Visit

Proposal 10911, Visit 06 Tue May 16 02:04:51 GMT 2006

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: ORIENT 36.0D TO 187.0 D; ORIENT 220.0D TO 273.5 D; ORIENT 317.0D TO 337.0 D

Patterns

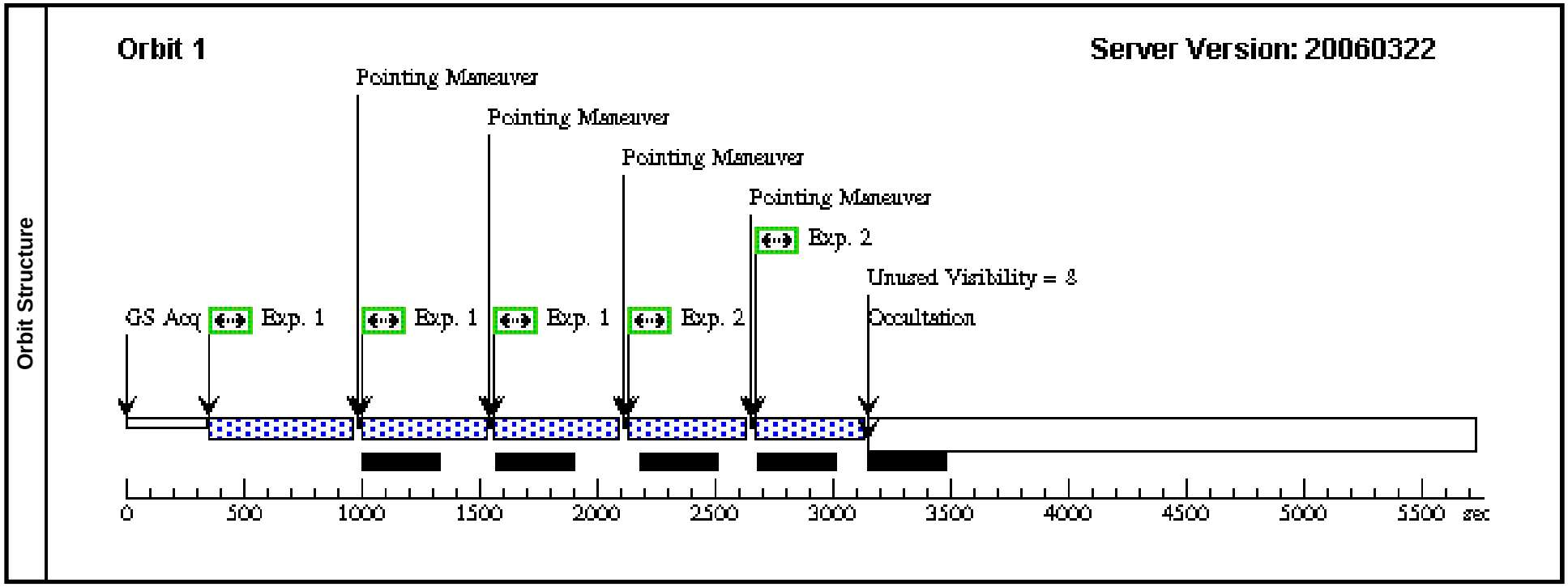
#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=1.4 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.3 Angle Between Sides= Center Pattern=false		(1)
(2)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=2.8 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.3 Angle Between Sides= Center Pattern=false		(2)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(6)	NGC1404	RA: 03 38 51.9000 (54.7162500d) Dec: -35 35 40.00 (-35.59444d) Equinox: J2000		V=9.9+/-0.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	F814 exp on N1404	(6) NGC1404	ACS/WFC, ACCUM, WFC	F814W	CR-SPLIT=NO	POS TARG 2,18	Pattern 1-1 (1)	1230.0 Secs	
								[==>408.0 Secs (Pattern 1)] *[==>408.0 Secs (Pattern 2)]* *[==>408.0 Secs (Pattern 3)]*	***[1]***
2	F475 exp on N1404	(6) NGC1404	ACS/WFC, ACCUM, WFC	F475W	CR-SPLIT=NO	POS TARG 2,18	Pattern 2-2 (2)	680.0 Secs	
								[==>340.0 Secs (Pattern 1)] *[==>340.0 Secs (Pattern 2)]*	***[1]***


Orbit Structure
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Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Exp. 2
Unused Visibility = &
GS Acq
Exp. 1
Exp. 1
Exp. 1
Exp. 2
Occultation
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