11166 - The Mass-dependent Evolution of the Black Hole-Bulge Relations

Cycle: 16, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

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VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) SDSS-J014412.77-000610.5	WFC3/IR	1	25-Nov-2009 21:00:49.0	yes
02	(2) SDSS-J234050.53+010635.6	NIC2	1	25-Nov-2009 21:00:53.0	yes
03	(3) SDSS-J095553.14+633742.8	WFC3/IR	1	25-Nov-2009 21:00:56.0	yes
04	(4) SDSS-J095850.15+400342.3	WFC3/IR	1	25-Nov-2009 21:00:58.0	yes
05	(5) SDSS-J100706.25+084228.4	NIC2	1	25-Nov-2009 21:01:01.0	yes
06	(6) SDSS-J102103.58+304755.9	NIC2	1	25-Nov-2009 21:01:03.0	yes
07	(7) SDSS-J104331.50-010732.8	NIC2	1	25-Nov-2009 21:01:06.0	yes
08	(8) SDSS-J104610.60+035031.2	NIC2	1	25-Nov-2009 21:01:08.0	yes
09	(9) SDSS-J125838.71+455515.5	NIC2	1	25-Nov-2009 21:01:10.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
10	(10) SDSS-J133414.84+114221.5	NIC2	1	25-Nov-2009 21:01:13.0	yes
11	(11) SDSS-J135226.90+392426.8	NIC2	1	25-Nov-2009 21:01:15.0	yes
12	(12) SDSS-J150116.83+533102.3	NIC2	1	25-Nov-2009 21:01:17.0	yes
13	(13) SDSS-J150541.78+493520.0	NIC2	1	25-Nov-2009 21:01:19.0	yes
14	(14) SDSS-J211531.68-072627.5	NIC2	1	25-Nov-2009 21:01:22.0	yes
54	(4) SDSS-J095850.15+400342.3	WFC3/IR	1	25-Nov-2009 21:01:24.0	yes
94	(14) SDSS-J211531.68-072627.5	NIC2	1	25-Nov-2009 21:01:26.0	yes

16 Total Orbits Used

ABSTRACT

In the local universe, the masses of giant black holes are correlated with the luminosities, masses and velocity dispersions of their host galaxy bulges. This indicates a surprisingly close connection between the evolution of galactic nuclei (on parsec scales) and of stars on kpc scales. A key observational test of proposed explanations for these correlations is to measure how they have evolved over cosmic time. Our ACS imaging of 20 Seyfert 1 galaxies at z=0.37 showed them to have smaller bulges (by a factor of 3) for a given central black hole mass than is found in galaxies in the present-day universe. However, since all our sample galaxies had black hole masses in the range 10^8.0--8.5 Msun, we could only measure the OFFSET in black hole mass to bulge luminosity ratios from the present epoch. By extending this study to black hole masses another factor of 10 lower, we propose to determine the full CORRELATION of black hole mass with host galaxy properties at a lookback time of 4 Gyrs and to test mass-dependency of the evolution. We have selected 14 Seyfert galaxies from SDSS DR5 whose narrow Hbeta emission lines (and estimated nuclear luminosities) imply that they have black hole masses around 10^7 Msuns. We will soon complete our Keck spectroscopic measures of their bulge velocity dispersions. We need a 1-orbit NICMOS image of each galaxy to separate its nonstellar luminosity from its bulge and disk. This will allow us to make the first determination of the full black hole/bulge relations at z=0.37 (e.g. M-L and M-sigma), as well as a test of whether active galaxies obey the Fundamental Plane relation at that epoch.

OBSERVING DESCRIPTION

Our goal is to obtain high resolution photometry of a sample of 14 Seyfert 1 galaxies at z=0.37+-0.01 for which central black hole masses and bulge velocity dispersions are obtained from the ground. We need to determine the luminosity of the bulge and of the central point source, in order to extend our measurement of the M-L and M-sigma relationships down to black hole mass ~10^7 solar mass.
We aim for uncertainties on the photometric quantities smaller than 0.2 dex, i.e. small with respect to the intrinsic uncertainty on the virial black hole mass estimates (0.4 dex). In addition, we will also derive effective radii (Re) and effective surface brightnesses (SBe) for the bulges, in order to derive their dynamical masses (sigma^2 Re) and probe the evolution of relationships involving more than one variable.

Strategy

The following strategy is based on our previous successful experience (Cycle 13).

Camera. NIC-2 on NICMOS is the camera of choice, providing superior sensitivity to the NIC-1 camera at the low surface brightness levels needed to do bulge/disk decomposition, and better PSF sampling than NIC-3. PSF sampling will be further improved by obtaining dithered exposures with semi-integer pixel offsets (4 positions per pixel). This will also enable robust cosmic ray/defects removal. Note

that the contrast between the central point source and the host galaxy in our sample is far more favorable than in other HST studies of QSOs hosts, where the AGN typically outshines the galaxy by a factor of 10 or more. Furthermore going to longer wavelength improves the contrast, since the host is redder than the nucleus. Therefore, in our case the modelling of the wings of the PSF is not nearly as crucial to obtain accurate parameters for the host galaxy. The residual PSF related uncertainties are estimated as described below.

Filter. To minimize the size of the PSF, and preserving high sensitivity, we select the F110W filter. This filter is close in wavelength to the rest frame 5100\AA\ continuum -- used to estimate the size of the broad line region.

Exposure time. The depth of the observations is chosen to obtain data of comparable quality to the ones we have obtained in Cycle 13 (adequate to meet our goals). Based on our previous extensive experience with structural parameters of distant bulges and AGN (e.g. Hunt et al.\ 1999; Treu et al. 2001), and confirmed by our study from Cycle 13 data (Treu et al. 2007), the limiting factor is the signal to noise at the relatively low surface brightness typical of the disk and the outer bulge. The typical surface brightness of the outer bulge region is I=22 mag arcsec^{-2} , corresponding to F110W$\sim$20.8 mag arcsec^{-2} (Vega). According to the NICMOS ETC, surface brightness I=22 mag arcsec^{-2} gives signal-to-noise ratio of 10 per 1x1 pixel area in 2300s using the F110W filter (i.e. one orbit per pointing, 4

exposures per pointing and related overhead), which is adequate for
our goals. The same exposures will yield extremely high
signal-to-noise ratio detection (S/N>200) of the central point
source, allowing for accurate determination of its luminosity, and the
wings of the PSF. NICMOS-PSF with the F110W filter is ~50% larger than ACS-PSF
in optical bands. However, stellar-to-AGN flux ratio is higher in near IR than optical.
Thus, we will be able to resolve host galaxy bulges.

Visit

Proposal 11166, Visit 01, completed Thu Nov 26 02:01:29 GMT 2009

Diagnostic Status: Warning

Scientific Instruments: WFC3/IR

Special Requirements: GYRO MODE 3GOBAD; ORIENT 348D TO 38 D; ORIENT 78D TO 128 D; ORIENT 168D TO 218 D; ORIENT 258D TO 308 D

Diagnostics

(Visit 01) Warning (Form): Gyro Mode overrides default value of 2G.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1)

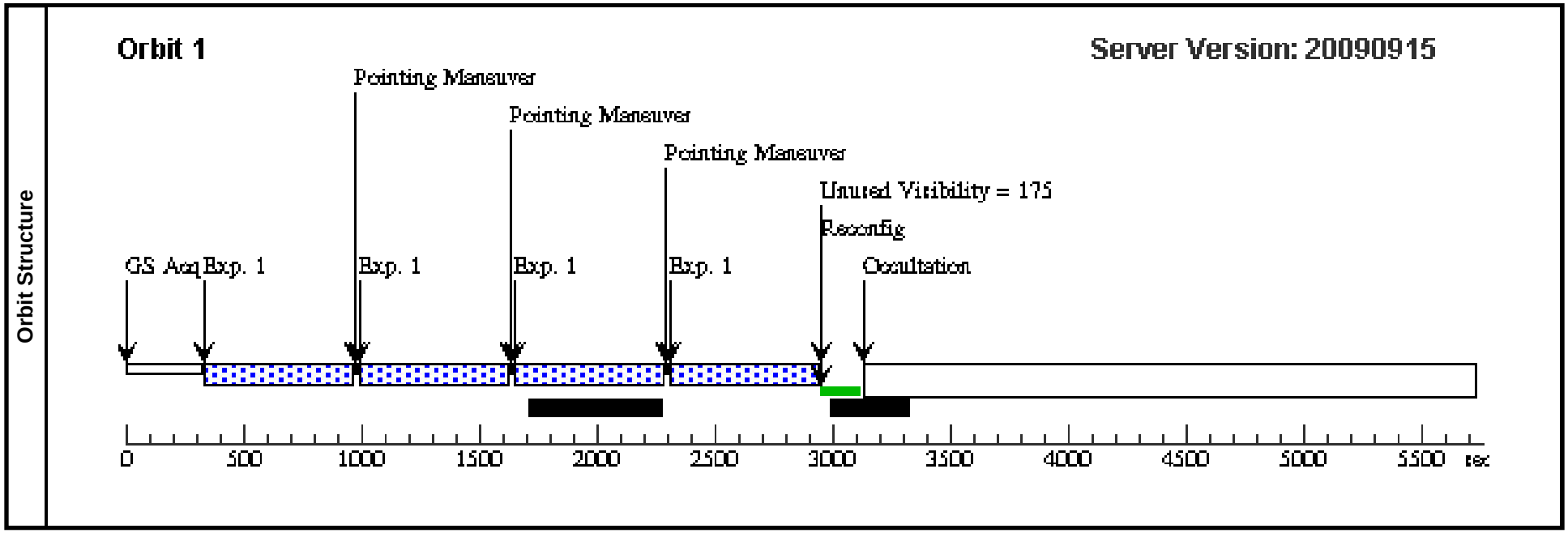
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	SDSS-J014412.77-000610.5	RA: 01 44 12.7700 (26.0532083d) Dec: -00 06 10.52 (-.10292d) Equinox: J2000		V=20.5+/-0.1 logMBH=7.53	Reference Frame: SDSS

Comments: .

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(1) SDSS-J014412.77-000610.5	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=10; SAMP-SEQ=STEP200	GS ACQ SCENARIO BASE1BNS	Pattern 2, Exps 1-1 (2)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20090915
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Unused Visibility = 175
Reconfig
GS Acq
Exp. 1
Exp. 1
Exp. 1
Exp. 1
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11166, Visit 02, completed Thu Nov 26 02:01:30 GMT 2009

Diagnostic Status: Warning

Scientific Instruments: NIC2

Special Requirements: (none)

Diagnostics

(Visit 02) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 02) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 02) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 02) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=4	Angle Between Sides=		
	Point Spacing=2.9625	Center Pattern=false		
	Line Spacing=			

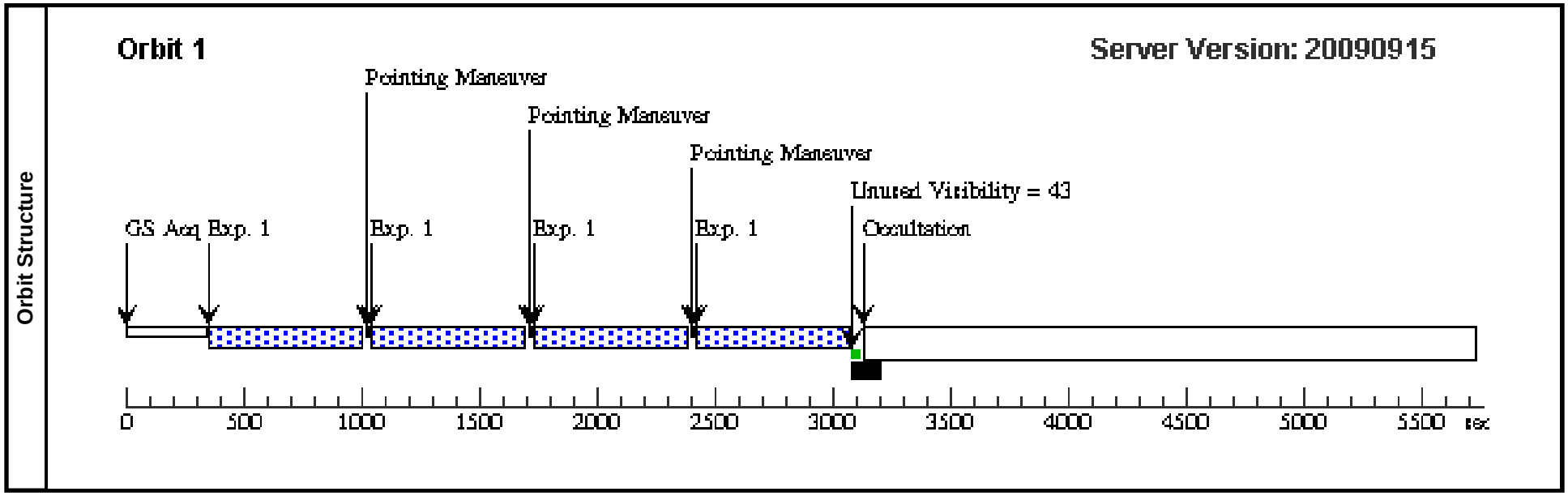
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	SDSS-J234050.53+010635.6	RA: 23 40 50.5200 (355.2105000d) Dec: +01 06 35.47 (1.10985d) Equinox: J2000		V=19+/-0.1 logMBH=7.53	Reference Frame: SDSS

Comments: .

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(2) SDSS-J234050.53+010635.6	NIC2, MULTIACCUM, NIC2	F110W	SAMP-SEQ=STEP64; NSAMP=18	GS ACQ SCENARIO BASE1TNS	Pattern 1, Exps 1-1 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20090915
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Unused Visibility = 43
GS Acq
Exp. 1
Exp. 1
Exp. 1
Exp. 1
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11166, Visit 03, scheduling Thu Nov 26 02:01:31 GMT 2009

Diagnostic Status: Warning

Scientific Instruments: WFC3/IR

Special Requirements: GYRO MODE 3GOBAD; ORIENT 24D TO 82 D; ORIENT 114D TO 172 D; ORIENT 204D TO 262 D; ORIENT 293D TO 352 D

Diagnostics

(Visit 03) Warning (Form): Gyro Mode overrides default value of 2G.

Patterns

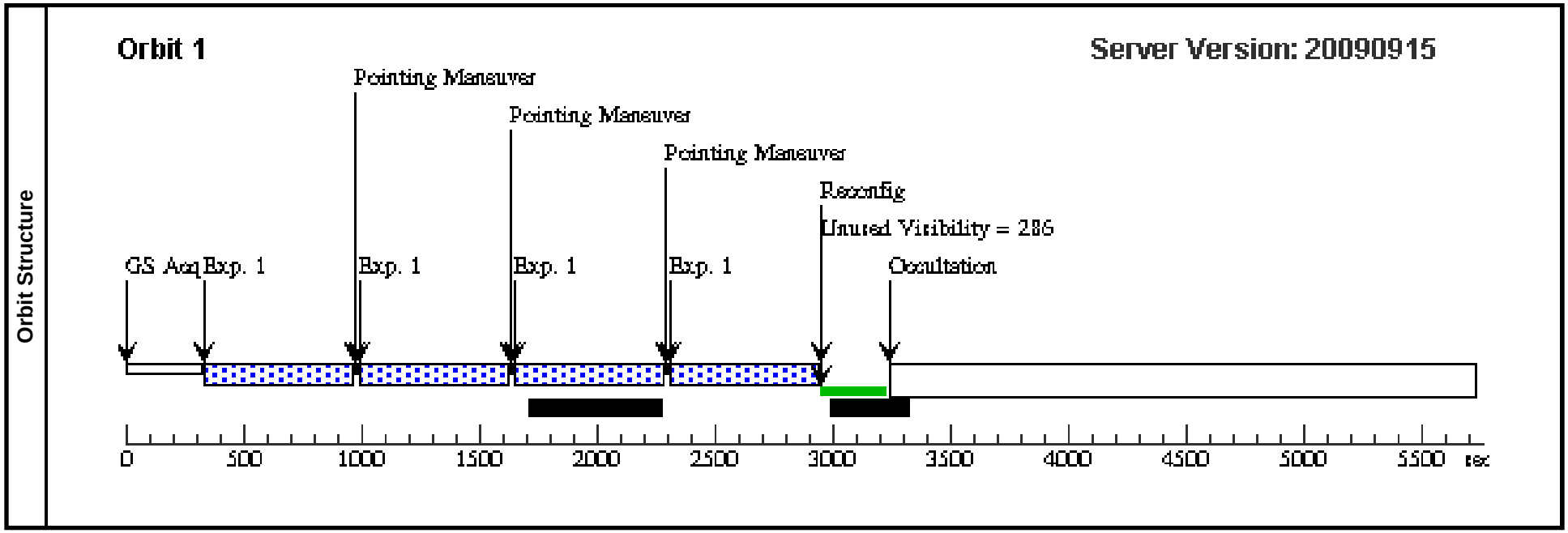
#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	SDSS-J095553.14+633742.8	RA: 09 55 53.1480 (148.9714500d) Dec: +63 37 42.85 (63.62857d) Equinox: J2000		V=18.77+/-0.1 logMBH=7.13	Reference Frame: SDSS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(3) SDSS-J095553.14+633742.8	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=10; SAMP-SEQ=STEP200	GS ACQ SCENARIO BASE1BNS	Pattern 2, Exps 1-1 (2)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20090915
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Reconfig
Unused Visibility = 286
GS Acq
Exp. 1
Exp. 1
Exp. 1
Exp. 1
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11166, Visit 04, failed Thu Nov 26 02:01:31 GMT 2009

Diagnostic Status: Warning

Scientific Instruments: WFC3/IR

Special Requirements: GYRO MODE 3GOBAD; ORIENT 30D TO 66 D; ORIENT 120D TO 156 D; ORIENT 210D TO 246 D; ORIENT 300D TO 336 D

Diagnostics

(Visit 04) Warning (Form): Gyro Mode overrides default value of 2G.

Patterns

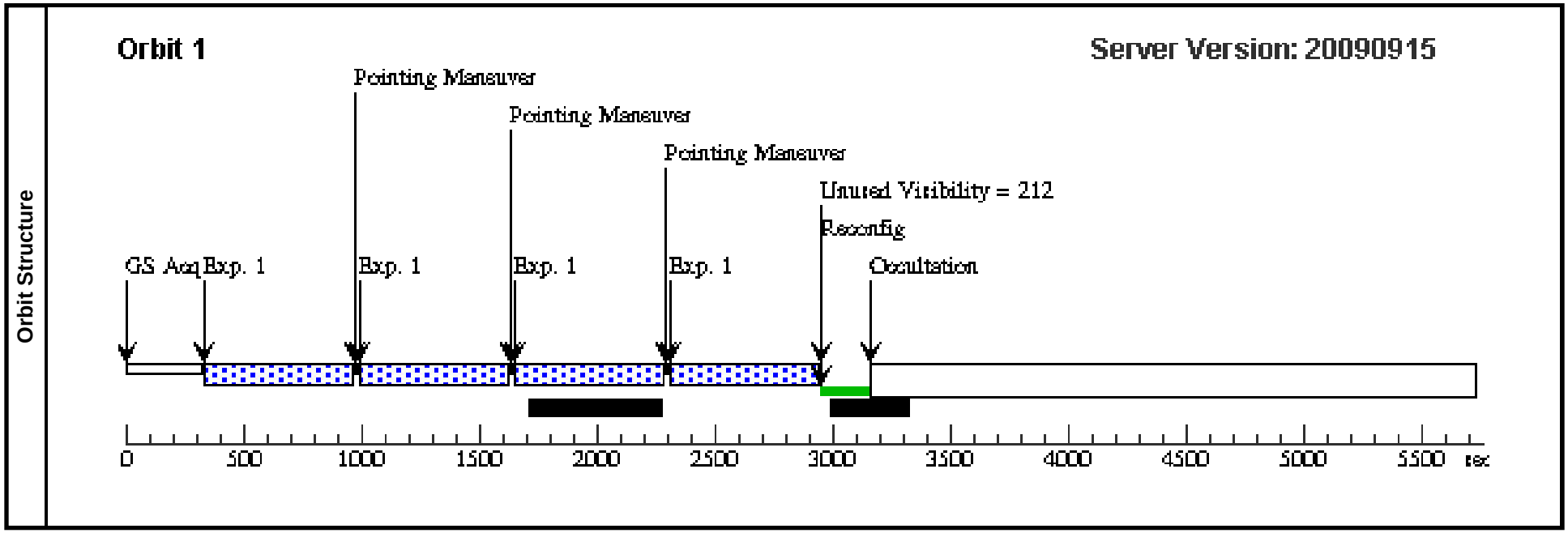
#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	SDSS-J095850.15+400342.3	RA: 09 58 50.1550 (149.7089792d) Dec: +40 03 42.34 (40.06176d) Equinox: J2000		V=18.97+/-0.1 logMBH=7.43	Reference Frame: SDSS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(4) SDSS-J095850.15+400342.3	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=10; SAMP-SEQ=STEP200	GS ACQ SCENARIO BASE1BNS	Pattern 2, Exps 1-1 (2)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20090915
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Unused Visibility = 212
Reconfig
GS Acq
Exp. 1
Exp. 1
Exp. 1
Exp. 1
Occultation
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500
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1500
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2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11166, Visit 05, completed Thu Nov 26 02:01:31 GMT 2009

Diagnostic Status: Warning

Scientific Instruments: NIC2

Special Requirements: (none)

Diagnostics

(Visit 05) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 05) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 05) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 05) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

Patterns

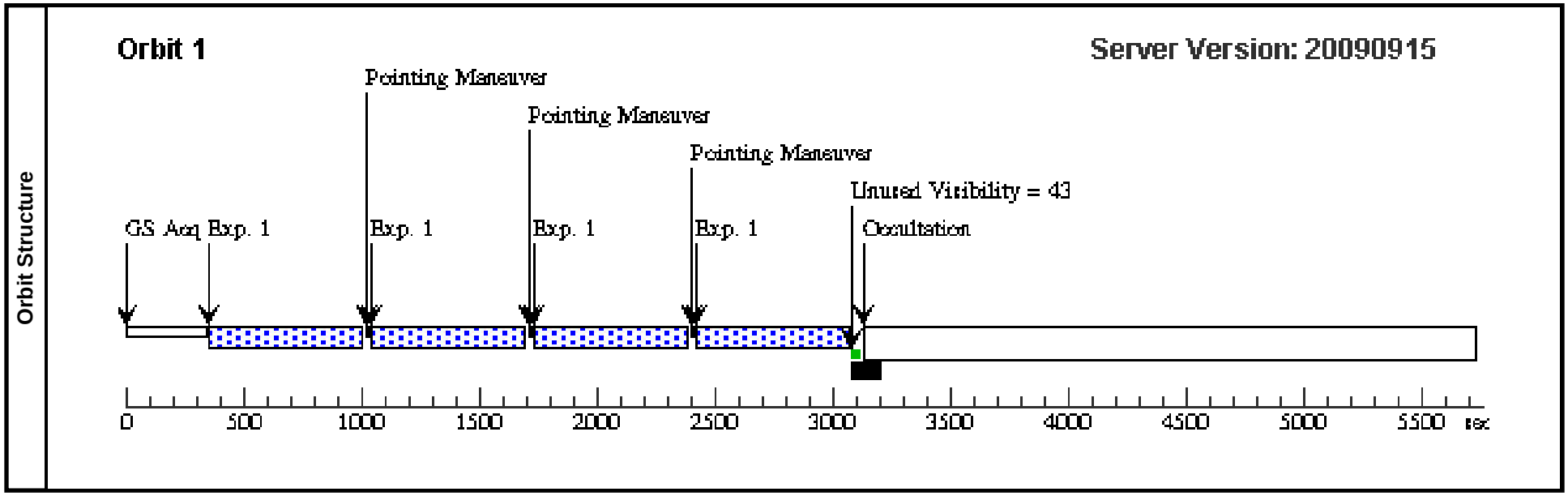
#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=4	Angle Between Sides=		
	Point Spacing=2.9625	Center Pattern=false		
	Line Spacing=			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(5)	SDSS-J100706.25+084228.4	RA: 10 07 6.2540 (151.7760583d) Dec: +08 42 28.44 (8.70790d) Equinox: J2000		V=18.76+/-0.1 logMBH=7.34	Reference Frame: SDSS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(5) SDSS-J100706.25+084228.4	NIC2, MULTIACCUM, NIC2	F110W	SAMP-SEQ=STEP64; NSAMP=18	GS ACQ SCENARIO BASE1TNS	Pattern 1, Exps 1-1 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***


Orbit Structure
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Server Version: 20090915
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Unused Visibility = 43
GS Acq
Exp. 1
Exp. 1
Exp. 1
Exp. 1
Occultation
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500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11166, Visit 06, completed Thu Nov 26 02:01:32 GMT 2009

Diagnostic Status: Warning

Scientific Instruments: NIC2

Special Requirements: (none)

Diagnostics

(Visit 06) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 06) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 06) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 06) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

Patterns

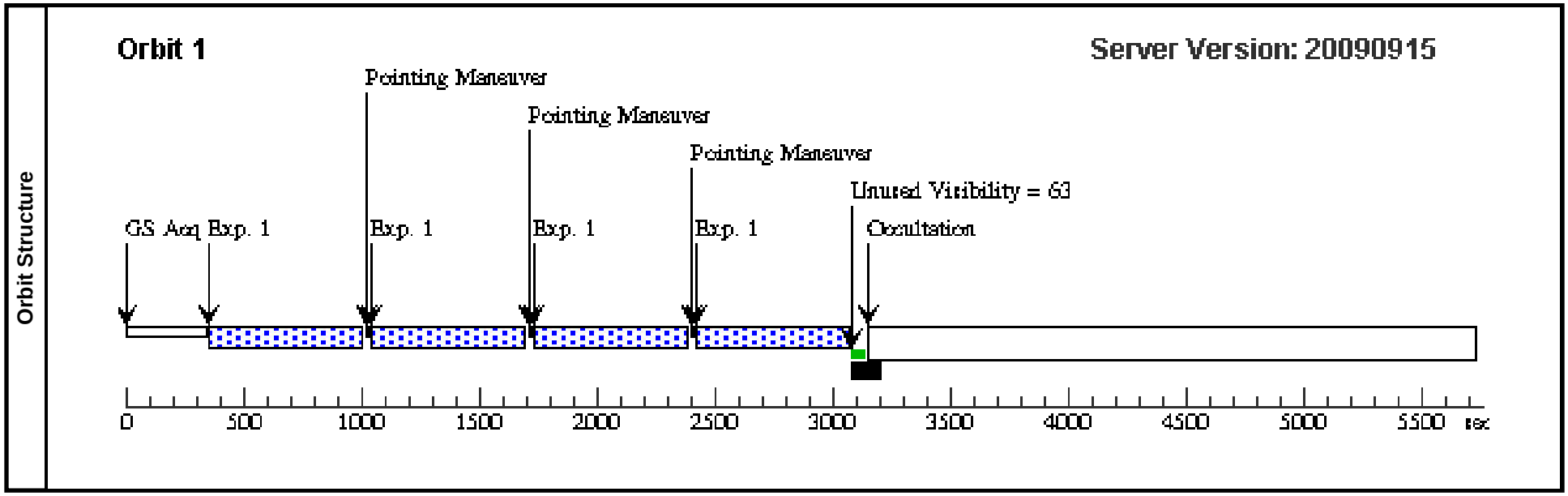
#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=4	Angle Between Sides=		
	Point Spacing=2.9625	Center Pattern=false		
	Line Spacing=			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(6)	SDSS-J102103.58+304755.9	RA: 10 21 3.5780 (155.2649083d) Dec: +30 47 55.90 (30.79886d) Equinox: J2000		V=18.97+/-0.1 logMBH=7.41	Reference Frame: SDSS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(6) SDSS-J102103.58+304755.9	NIC2, MULTIACCUM, NIC2	F110W	SAMP-SEQ=STEP64; NSAMP=18	GS ACQ SCENARIO BASE1TNS	Pattern 1, Exps 1-1 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20090915
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Unused Visibility = 63
GS Acq
Exp. 1
Exp. 1
Exp. 1
Exp. 1
Occultation
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3000
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4000
4500
5000
5500
sec

Visit

Proposal 11166, Visit 07, completed Thu Nov 26 02:01:32 GMT 2009

Diagnostic Status: Warning

Scientific Instruments: NIC2

Special Requirements: (none)

Diagnostics

(Visit 07) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 07) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 07) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 07) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

Patterns

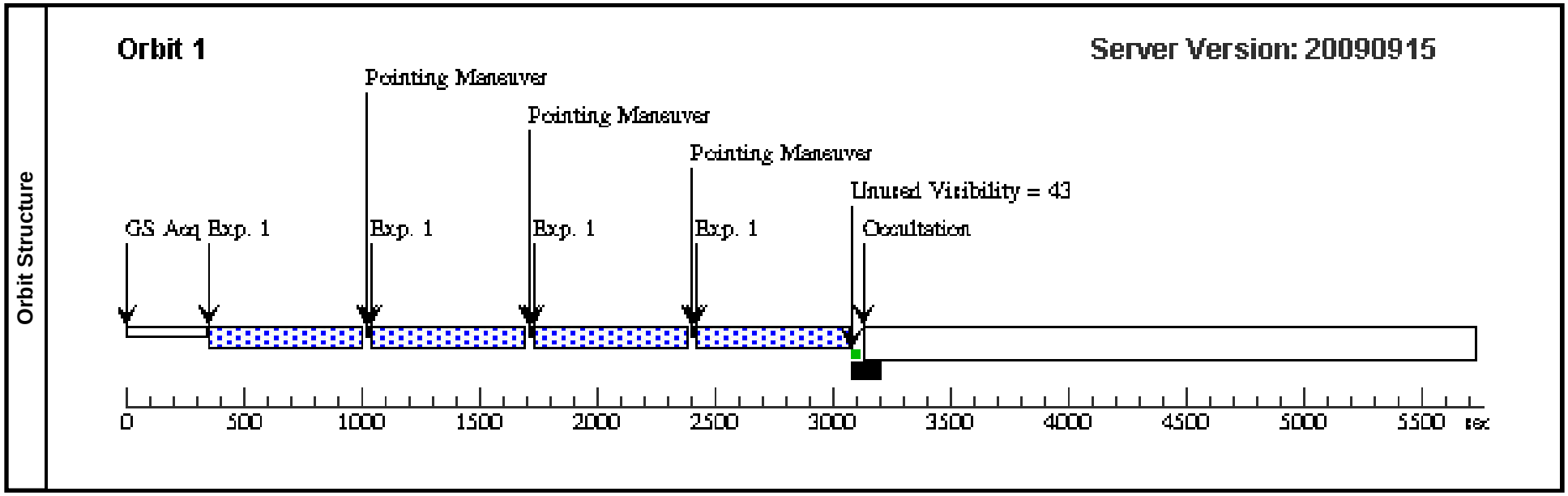
#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=4	Angle Between Sides=		
	Point Spacing=2.9625	Center Pattern=false		
	Line Spacing=			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(7)	SDSS-J104331.50-010732.8	RA: 10 43 31.5000 (160.8812500d) Dec: -01 07 32.88 (-1.12580d) Equinox: J2000		V=18.84+/-0.1 logMBH=7.07	Reference Frame: SDSS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(7) SDSS-J104331.50-010732.8	NIC2, MULTIACCUM, NIC2	F110W	SAMP-SEQ=STEP64; NSAMP=18	GS ACQ SCENARIO BASE1TNS	Pattern 1, Exps 1-1 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20090915
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Unused Visibility = 43
GS Acq
Exp. 1
Exp. 1
Exp. 1
Exp. 1
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11166, Visit 08, completed Thu Nov 26 02:01:33 GMT 2009

Diagnostic Status: Warning

Scientific Instruments: NIC2

Special Requirements: (none)

Diagnostics

(Visit 08) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 08) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 08) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 08) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

Patterns

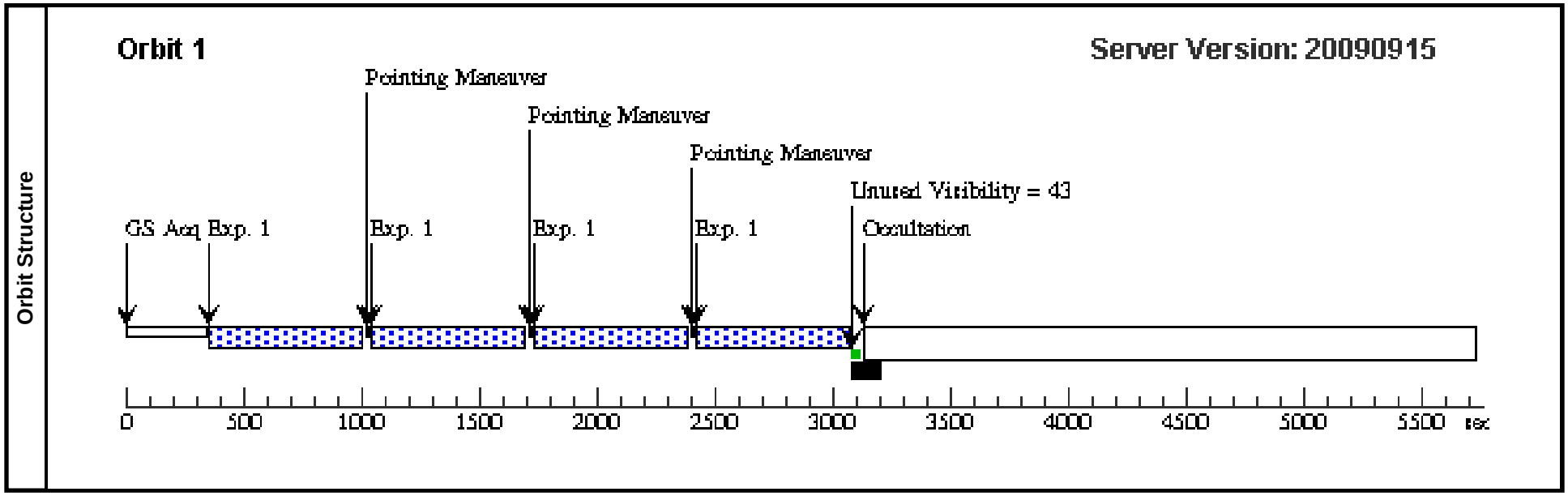
#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=4	Angle Between Sides=		
	Point Spacing=2.9625	Center Pattern=false		
	Line Spacing=			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(8)	SDSS-J104610.60+035031.2	RA: 10 46 10.6056 (161.5441900d) Dec: +03 50 31.27 (3.84202d) Equinox: J2000		V=18.53+/-0.1 logMBH=7.26	Reference Frame: SDSS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(8) SDSS-J104610.60+035031.2	NIC2, MULTIACCUM, NIC2	F110W	SAMP-SEQ=STEP64; NSAMP=18	GS ACQ SCENARIO BASE1TNS	Pattern 1, Exps 1-1 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20090915
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Unused Visibility = 43
GS Acq
Exp. 1
Exp. 1
Exp. 1
Exp. 1
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11166, Visit 09, completed Thu Nov 26 02:01:33 GMT 2009

Diagnostic Status: Warning

Scientific Instruments: NIC2

Special Requirements: (none)

Diagnostics

(Visit 09) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 09) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 09) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 09) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

Patterns

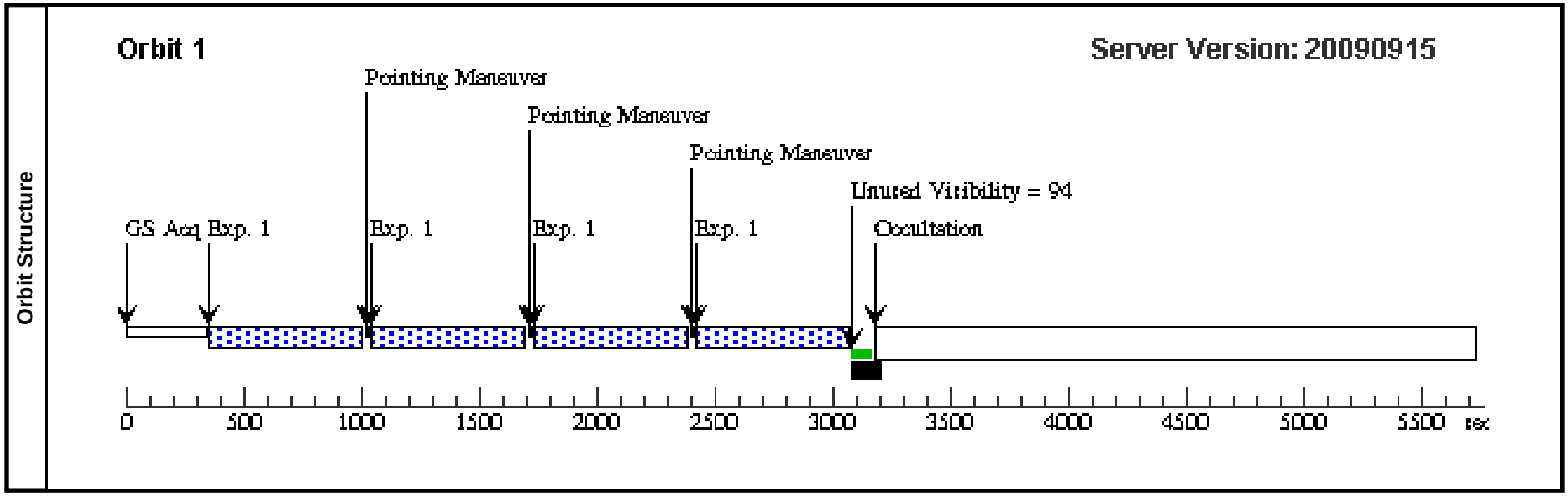
#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=4	Angle Between Sides=		
	Point Spacing=2.9625	Center Pattern=false		
	Line Spacing=			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(9)	SDSS-J125838.71+455515.5	RA: 12 58 38.7190 (194.6613292d) Dec: +45 55 15.49 (45.92097d) Equinox: J2000		V=18.68+/-0.1 logMBH=7.62	Reference Frame: SDSS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(9) SDSS-J125838.71+455515.5	NIC2, MULTIACCUM, NIC2	F110W	SAMP-SEQ=STEP64; NSAMP=18	GS ACQ SCENARIO BASE1TNS	Pattern 1, Exps 1-1 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20090915
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Unused Visibility = 94
GS Acq
Exp. 1
Exp. 1
Exp. 1
Exp. 1
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11166, Visit 10, completed Thu Nov 26 02:01:34 GMT 2009

Diagnostic Status: Warning

Scientific Instruments: NIC2

Special Requirements: (none)

Diagnostics

(Visit 10) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 10) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 10) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 10) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

Patterns

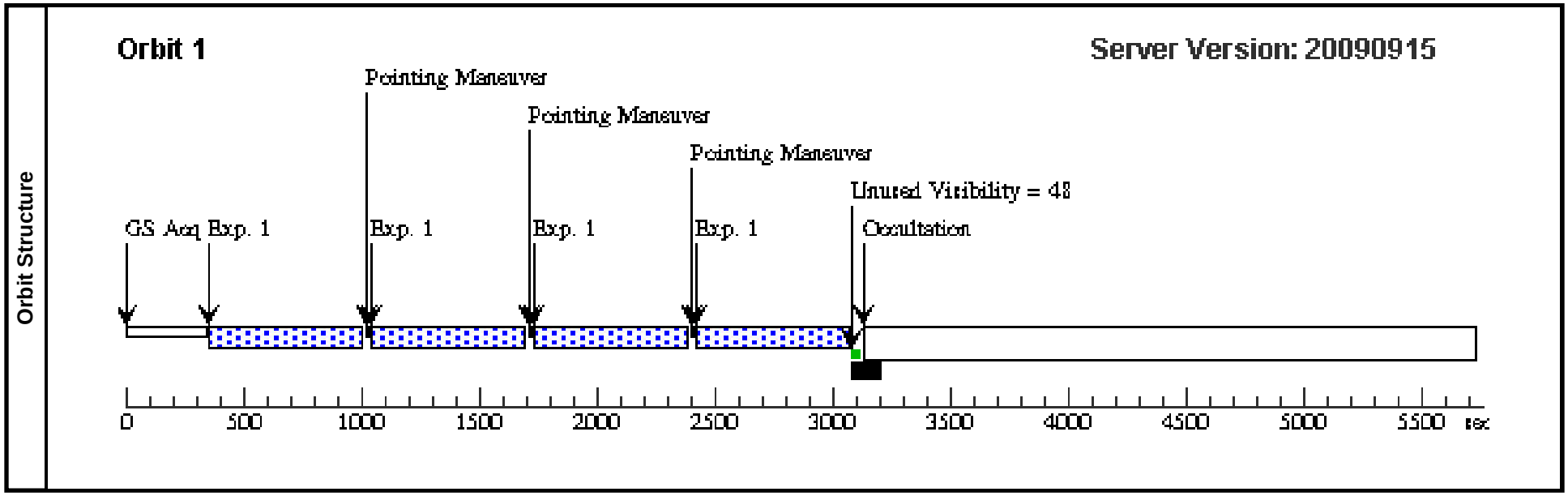
#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=4	Angle Between Sides=		
	Point Spacing=2.9625	Center Pattern=false		
	Line Spacing=			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(10)	SDSS-J133414.84+114221.5	RA: 13 34 14.8415 (203.5618396d) Dec: +11 42 21.53 (11.70598d) Equinox: J2000		V=17.86+/-0.1 logMBH=7.29	Reference Frame: SDSS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(10) SDSS-J133414.84+114221.5	NIC2, MULTIACCUM, NIC2	F110W	SAMP-SEQ=STEP64; NSAMP=18	GS ACQ SCENARIO BASE1TNS	Pattern 1, Exps 1-1 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20090915
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Unused Visibility = 48
GS Acq
Exp. 1
Exp. 1
Exp. 1
Exp. 1
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11166, Visit 11, completed Thu Nov 26 02:01:34 GMT 2009

Diagnostic Status: Warning

Scientific Instruments: NIC2

Special Requirements: (none)

Diagnostics

(Visit 11) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 11) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 11) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 11) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

Patterns

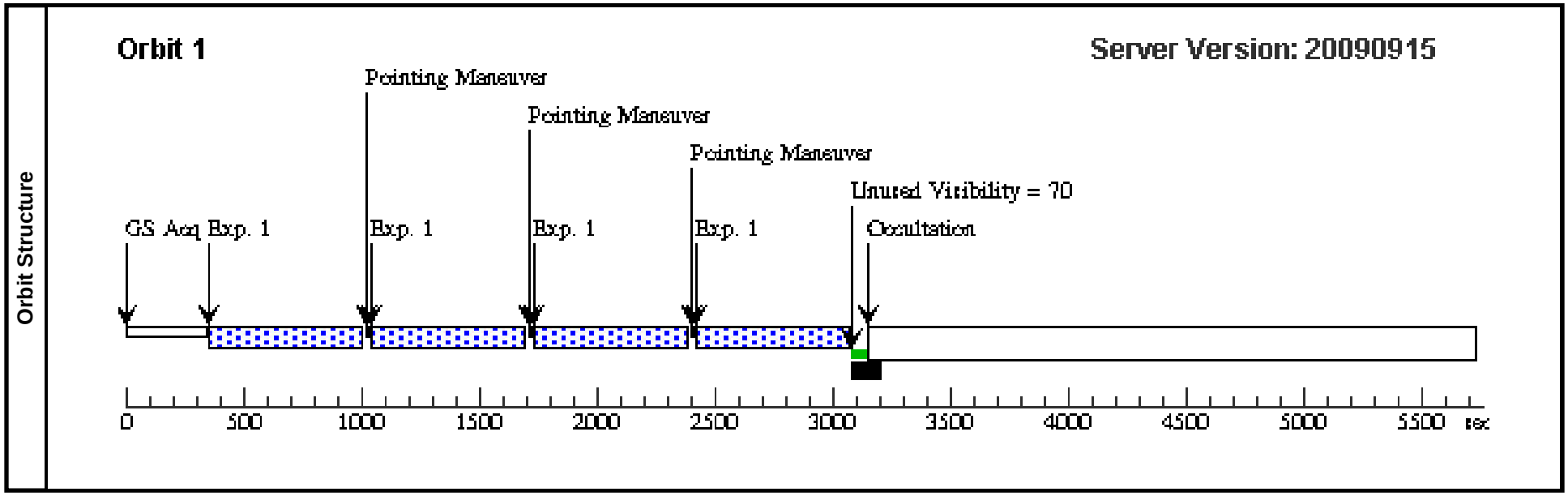
#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=4	Angle Between Sides=		
	Point Spacing=2.9625	Center Pattern=false		
	Line Spacing=			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(11)	SDSS-J135226.90+392426.8	RA: 13 52 26.9000 (208.1120833d) Dec: +39 24 26.86 (39.40746d) Equinox: J2000		V=18.55+/-0.1 logMBH=7.26	Reference Frame: SDSS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(11) SDSS-J135226.90+392426.8	NIC2, MULTIACCUM, NIC2	F110W	SAMP-SEQ=STEP64; NSAMP=18	GS ACQ SCENARIO BASE1TNS	Pattern 1, Exps 1-1 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20090915
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Unused Visibility = 70
GS Acq
Exp. 1
Exp. 1
Exp. 1
Exp. 1
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11166, Visit 12, completed Thu Nov 26 02:01:34 GMT 2009

Diagnostic Status: Warning

Scientific Instruments: NIC2

Special Requirements: (none)

Diagnostics

(Visit 12) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 12) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 12) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 12) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

Patterns

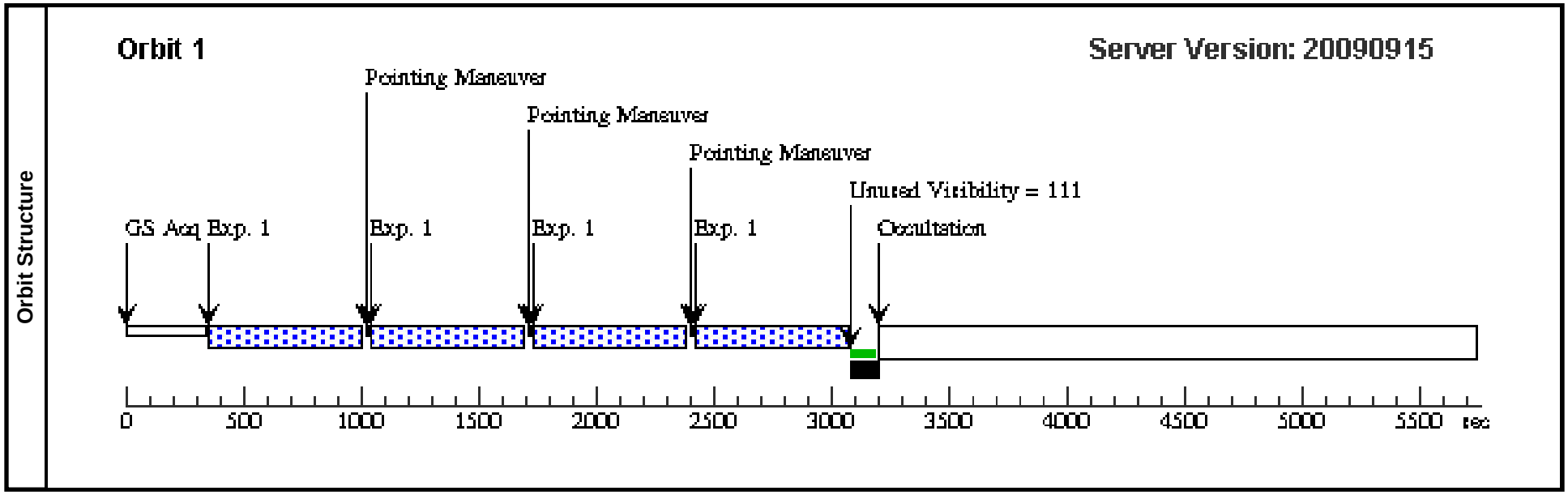
#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=4	Angle Between Sides=		
	Point Spacing=2.9625	Center Pattern=false		
	Line Spacing=			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(12)	SDSS-J150116.83+533102.3	RA: 15 01 16.8310 (225.3201292d) Dec: +53 31 2.35 (53.51732d) Equinox: J2000		V=17.94+/-0.1 logMBH=7.49	Reference Frame: SDSS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(12) SDSS-J150116.83+533102.3	NIC2, MULTIACCUM, NIC2	F110W	SAMP-SEQ=STEP64; NSAMP=18	GS ACQ SCENARIO BASE1TNS	Pattern 1, Exps 1-1 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20090915
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Unused Visibility = 111
GS Acq
Exp. 1
Exp. 1
Exp. 1
Exp. 1
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11166, Visit 13, completed Thu Nov 26 02:01:35 GMT 2009

Diagnostic Status: Warning

Scientific Instruments: NIC2

Special Requirements: (none)

Diagnostics

(Visit 13) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 13) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 13) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 13) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=4	Angle Between Sides=		
	Point Spacing=2.9625	Center Pattern=false		
	Line Spacing=			

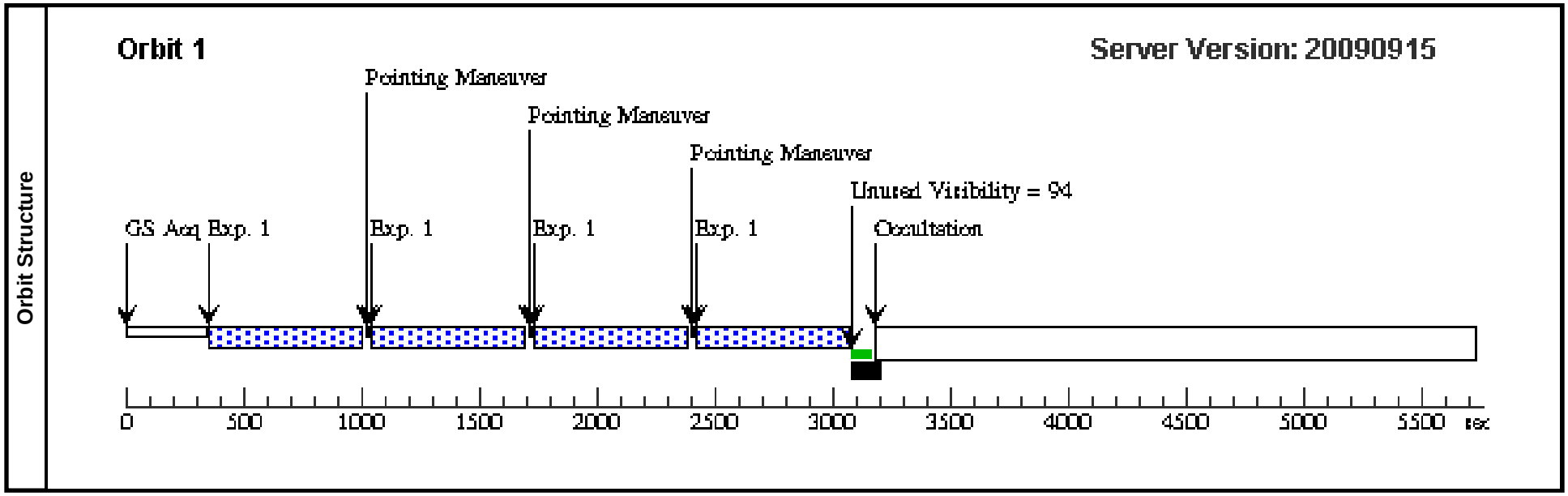
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(13)	SDSS-J150541.78+493520.0	RA: 15 05 41.7860 (226.4241083d) Dec: +49 35 20.04 (49.58890d) Equinox: J2000		V=18.87+/-0.1 logMBH=7.64	Reference Frame: SDSS

Comments: .

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(13) SDSS-J150541.78+493520.0	NIC2, MULTIACCUM, NIC2	F110W	SAMP-SEQ=STEP64; NSAMP=18	GS ACQ SCENARIO BASE1TNS	Pattern 1, Exps 1-1 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20090915
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Unused Visibility = 94
GS Acq
Exp. 1
Exp. 1
Exp. 1
Exp. 1
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11166, Visit 14, failed Thu Nov 26 02:01:35 GMT 2009

Diagnostic Status: Warning

Scientific Instruments: NIC2

Special Requirements: (none)

Diagnostics

(Visit 14) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 14) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 14) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 14) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=4	Angle Between Sides=		
	Point Spacing=2.9625	Center Pattern=false		
	Line Spacing=			

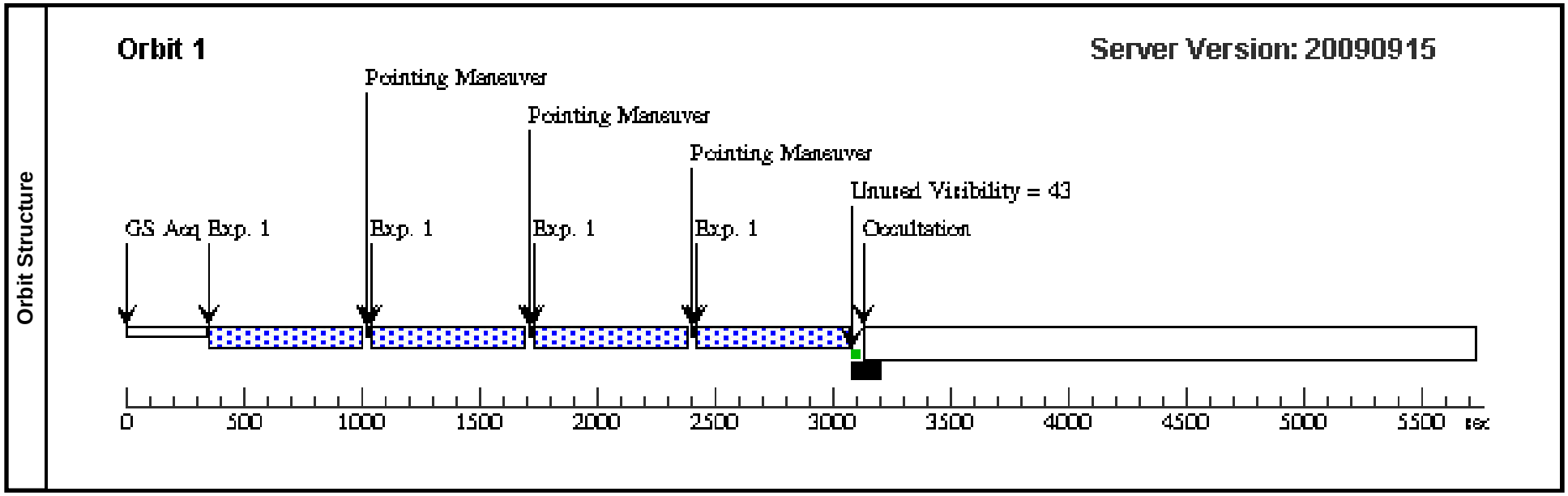
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(14)	SDSS-J211531.68-072627.5	RA: 21 15 31.6850 (318.8820208d) Dec: -07 26 27.49 (-7.44097d) Equinox: J2000		V=19.13+/-0.1 logMBH=7.53	Reference Frame: SDSS

Comments: .

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(14) SDSS-J211531.68-072627.5	NIC2, MULTIACCUM, NIC2	F110W	SAMP-SEQ=STEP64; NSAMP=18	GS ACQ SCENARIO BASE1TNS	Pattern 1, Exps 1-1 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20090915
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Unused Visibility = 43
GS Acq
Exp. 1
Exp. 1
Exp. 1
Exp. 1
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11166, Visit 54, implementation Thu Nov 26 02:01:36 GMT 2009

Diagnostic Status: Warning

Scientific Instruments: WFC3/IR

Special Requirements: GYRO MODE 3GOBAD; ORIENT 30D TO 66 D; ORIENT 120D TO 156 D; ORIENT 210D TO 246 D; ORIENT 300D TO 336 D

Comments: This is a repeat of failed visit 04.

Diagnostics

(Visit 54) Warning (Form): Gyro Mode overrides default value of 2G.

Patterns

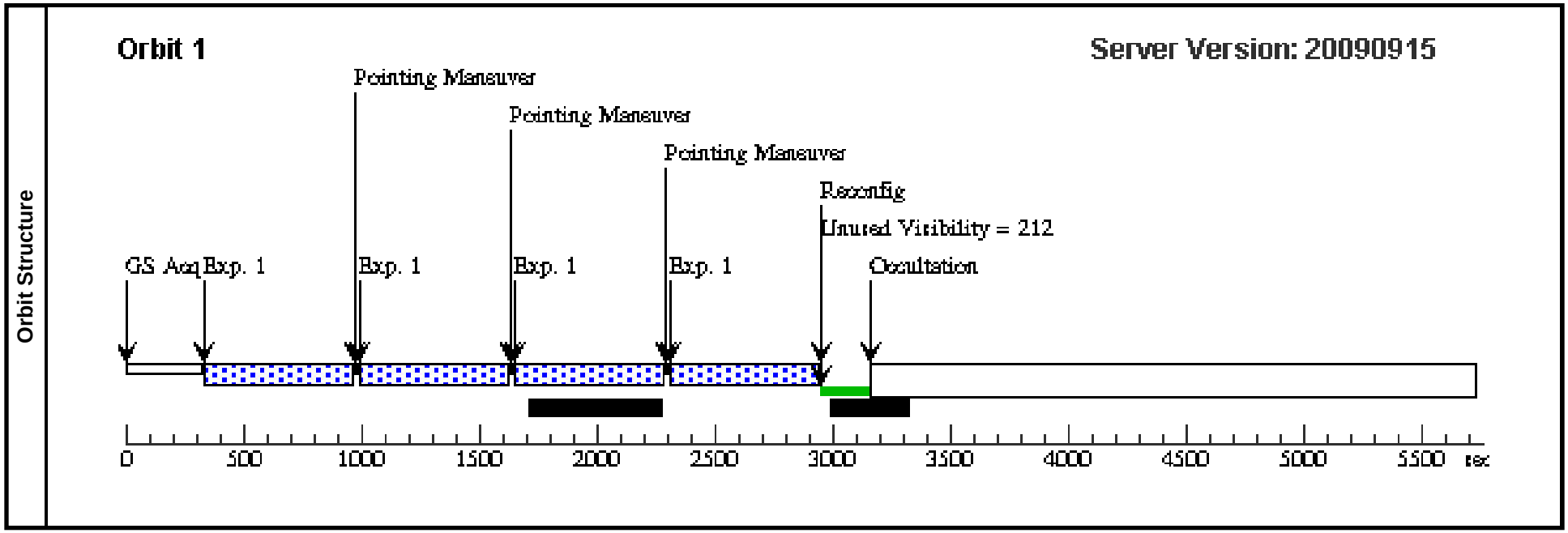
#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	SDSS-J095850.15+400342.3	RA: 09 58 50.1550 (149.7089792d) Dec: +40 03 42.34 (40.06176d) Equinox: J2000		V=18.97+/-0.1 logMBH=7.43	Reference Frame: SDSS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(4) SDSS-J095850.15+400342.3	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=10; SAMP-SEQ=STEP200	GS ACQ SCENARIO BASE1BN3	Pattern 2, Exps 1-1 (2)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20090915
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Reconfig
Unused Visibility = 212
GS Acq
Exp. 1
Exp. 1
Exp. 1
Exp. 1
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11166, Visit 94, completed Thu Nov 26 02:01:36 GMT 2009

Diagnostic Status: Warning

Scientific Instruments: NIC2

Special Requirements: (none)

Comments: This is a repeat of visit 14.

Diagnostics

(Visit 94) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 94) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 94) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(Visit 94) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=0.0		
	Number Of Points=4	Angle Between Sides=		
	Point Spacing=2.9625	Center Pattern=false		
	Line Spacing=			

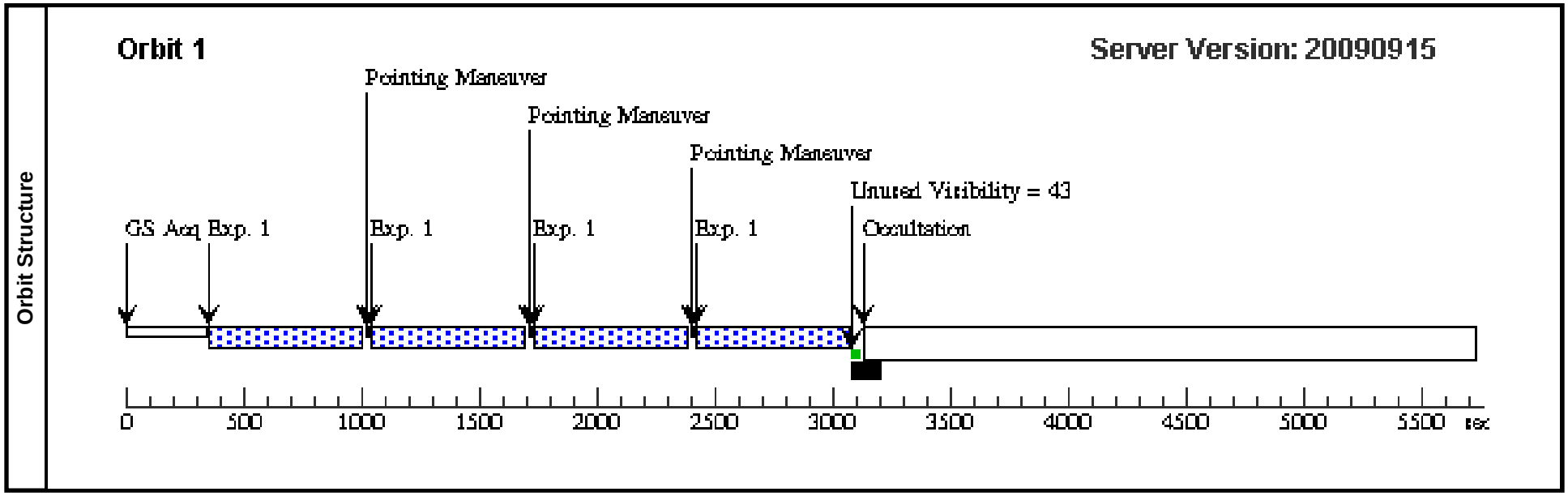
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(14)	SDSS-J211531.68-072627.5	RA: 21 15 31.6850 (318.8820208d) Dec: -07 26 27.49 (-7.44097d) Equinox: J2000		V=19.13+/-0.1 logMBH=7.53	Reference Frame: SDSS

Comments: .

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(14) SDSS-J211531.68-072627.5	NIC2, MULTIACCUM, NIC2	F110W	SAMP-SEQ=STEP64; NSAMP=18	GS ACQ SCENARIO BASE1TNS	Pattern 1, Exps 1-1 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20090915
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Unused Visibility = 43
GS Acq
Exp. 1
Exp. 1
Exp. 1
Exp. 1
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec