11661 - The Black Hole Mass - Bulge Luminosity Relationship for the Nearest Reverberation-Mapped AGNs

Cycle: 17, 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) NGC-3227	WFC3/UVIS	1	14-Oct-2009 21:01:55.0	yes
02	(2) NGC-3516	WFC3/UVIS	1	14-Oct-2009 21:01:59.0	yes
03	(3) NGC-3783	WFC3/UVIS	1	14-Oct-2009 21:02:02.0	yes
04	(4) NGC-4051	WFC3/UVIS	1	14-Oct-2009 21:02:05.0	yes
05	(5) NGC-4151	WFC3/UVIS	1	14-Oct-2009 21:02:08.0	yes
06	(6) NGC-4593	WFC3/UVIS	1	14-Oct-2009 21:02:10.0	yes
07	(7) NGC-5548	WFC3/UVIS	1	14-Oct-2009 21:02:14.0	yes
08	(8) NGC-7469	WFC3/UVIS	1	14-Oct-2009 21:02:16.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
09	(9) EGGR-102	WFC3/UVIS	1	14-Oct-2009 21:02:19.0	yes

9 Total Orbits Used

ABSTRACT

We propose to obtain WFC3 host galaxy images of the eight nearest AGNs with masses from reverberation mapping, and one star as a PSF model. These images will allow us to determine with unprecedented accuracy the bulge luminosities of the host galaxies, a goal which is not achievable from the ground due to the blurring of the very bright PSF component under typical, and even very good, seeing conditions. High-resolution ACS images of the host galaxies of more luminous AGNs reveal that the black hole mass-bulge luminosity and black hole mass-bulge mass relationships for AGNs are not well constrained and arise from what appear to be fundamentally flawed data sets. With the addition of the images proposed here to our current sample of ACS images, we will be able to extend our determinations of the black hole mass-bulge luminosity and black hole mass-bulge mass relationships for AGNs by an order of magnitude and test our preliminary results for these fundamentally important relationships against those previously determined for quiescent galaxies.

OBSERVING DESCRIPTION

We propose to obtain host-galaxy images of the eight nearest reverberation-mapped AGNs through the F547M filter on the UVIS channel of Wide Field Camera 3. The F547M filter will allow us to probe the continuum flux from each object in the spectral region between Halpha and Hbeta, and will also allow for consistency between these observations and those previously acquired with the ACS HRC through the F550M filter. In addition, we also propose to image one white dwarf star to create a very high dynamic range PSF model. Each object will only require a single orbit, for a total of 9 orbits.

In addition to the HRC images of each object, we also have ground-based images from MDM Observatory with a wide field of view (8 ï¿½8) for each object in B, V , and R. We have successfully fit these images with Galfit and determined the properties of the exponential disk in each of these galaxies. The disk parameters from the ground-based images can be held fixed while fitting the bulge and smaller-scale features (such as bars and

lenses) in the proposed WFC3 images.

One of the main considerations in this project will be to accurately account for the AGN PSF contribution by replacing the saturated pixels in deeper exposures with pixels from shallower, unsaturated exposures that are scaled by the exposure time ratio. This method was shown to work extremely well in the previous ACS programs. In those cases, dithering was not employed between images, as the PSF is known to change shape at different locations on the detector. However, dithering has many useful features, including facilitating the rejection of cosmic rays and detector artifacts (such as transient warm pixels), as well as filling any gaps between detectors that would otherwise result in a loss of information. Therefore, we will use one of the standard 2-point dithering patterns for our proposed program with WFC3 as explained below.

TheWFC3 exposure time calculator estimates a time to saturation of 12 40 s for each of the objects in our sample. However, this estimate is highly dependent on the flux state that each object is in at the time of observation. For each of the objects, a sequence of graduated exposures will ensure that we acquire both unsaturated and saturated observations, which will allow us to maximize the dynamic range in the final, summed images. Each orbit will be broken up into two sets of graduated exposures with exposure times, for example 5s, 100 s, and 1000 s. The exposures will be ordered such that two full parallel buffer dumps per orbit will occur during the long exposures, thus involving no additional overhead time, and the two graduated exposure sequences will be separated by a dithering maneuver. The surface brightness of the bulge in each of the eight objects is ~21mag arcsec^2, as measured from the edges of the previously acquired HRC images. The WFC3 exposure time calculator estimates that with the proposed observations, we should reach a signal-to-noise ratio per pixel of ~10 at these surface brightnesses. As the host galaxies of these AGNs are quite extended, we propose to center the exposures with the UVIS aperture and dither with the WFC3-UVIS-MOST-DITH-LINE pattern with the following modifications to the defaults for this pattern: 2 pointings rather than 3 and no subpattern. The default orientation and offset will allow us to dither across the gap, thereby ensuring that we do not lose any information in the host galaxy structure.

In a similar manner, we propose to image EGGR 102, an isolated white dwarf with V = 12.8 to create a high-dynamic range PSF model. Its moderate apparent brightness makes EGGR 102 a suitable star to use with HST imaging, as it will not saturate in short exposures but also requires little time to achieve a high S/N. In addition, its spectral shape in the optical is similar to the spectral shape of AGNs. EGGR 102 has been used extensively as a PSF model for HST imaging (e.g., McLure et al. 1999), as it more accurately fits both the bright core and the extended PSF wings than do TinyTim models of the PSF. We will again use two sets of graduated exposures, to maximize the dynamic range, and dither in the same pattern as the

data. The WFC3 exposure time calculator estimates a time to saturation of 6.8 s for EGGR 102. We will take exposures that are 4 s, 40 s, and 600 s in length. In this case, the buffer dumps will be in serial with the exposures. Two full buffer dumps of 664 s each must occur within the unrestricted visibility time of the object. We will use the same aperture and dither pattern as the AGN host galaxy observations.

As a final note, WFC3 is the best choice for this project, because of its high sensitivity, wide field of view, and relatively small pixels. However, should WFC3 not be available for use, the observations proposed here may be successfully carried out with the same number of requested orbits using ACS WFC. If it became necessary to use WFPC2, the decreased sensitivity of the detector would require that we double the number of orbits for most of our
targets.

Visit

Proposal 11661, Visit 01, implementation Thu Oct 15 01:02:22 GMT 2009

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-MOS-DITH-LINE Purpose=DITHER Number Of Points=2 Point Spacing=4.0 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.754 Angle Between Sides= Center Pattern=true		(1)

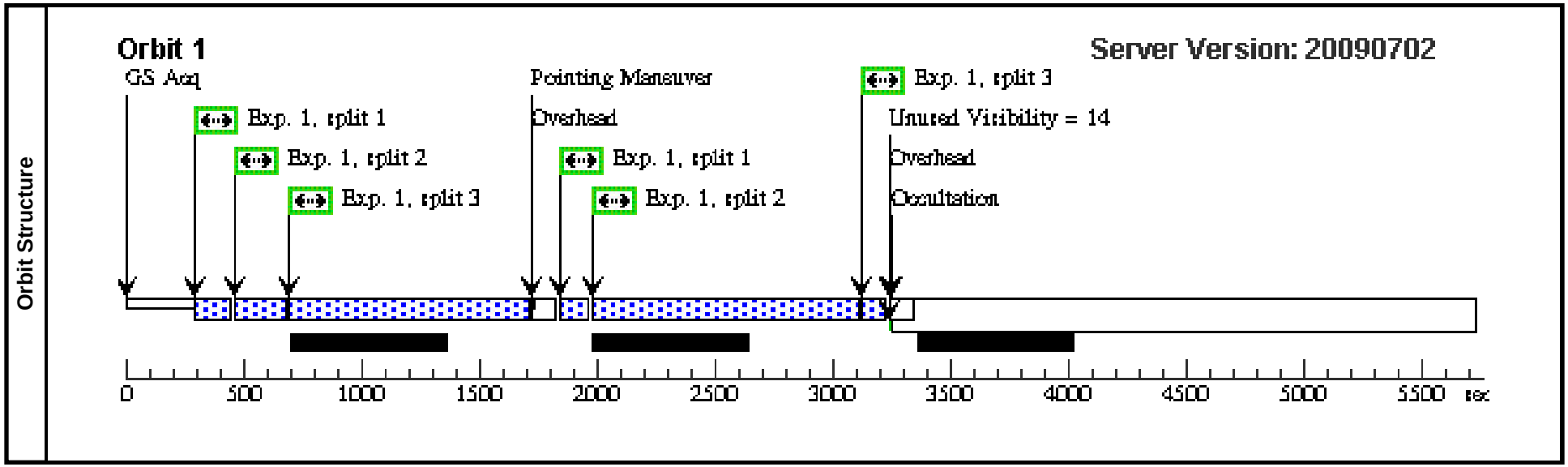
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	NGC-3227	RA: 10 23 30.6000 (155.8775000d) Dec: +19 51 54.00 (19.86500d) Equinox: J2000		V=(?) B = 11.1	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the NED database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(1) NGC-3227	WFC3/UVIS, ACCUM, UVIS-FIX	F547M	CR-SPLIT=3		Pattern 1, Exps 1-1 (1)	1990 Secs	
								[==>5 Secs (Pattern 1, Split 1)] *[==>100.0 Secs (Pattern 1, Split 2)]* *[==>1020.0 Secs (Pattern 1, Split 3)]* *[==>5 Secs (Pattern 2, Split 1)]* *[==>1020.0 Secs (Pattern 2, Split 2)]* *[==>100.0 Secs (Pattern 2, Split 3)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20090702
GS Acq
Exp. 1, split 1
Exp. 1, split 2
Exp. 1, split 3
Pointing Maneuver
Overhead
Exp. 1, split 1
Exp. 1, split 2
Exp. 1, split 3
Unused Visibility = 14
Overhead
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11661, Visit 02, implementation Thu Oct 15 01:02:23 GMT 2009

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-MOS-DITH-LINE Purpose=DITHER Number Of Points=2 Point Spacing=4.0 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.754 Angle Between Sides= Center Pattern=true		(1)

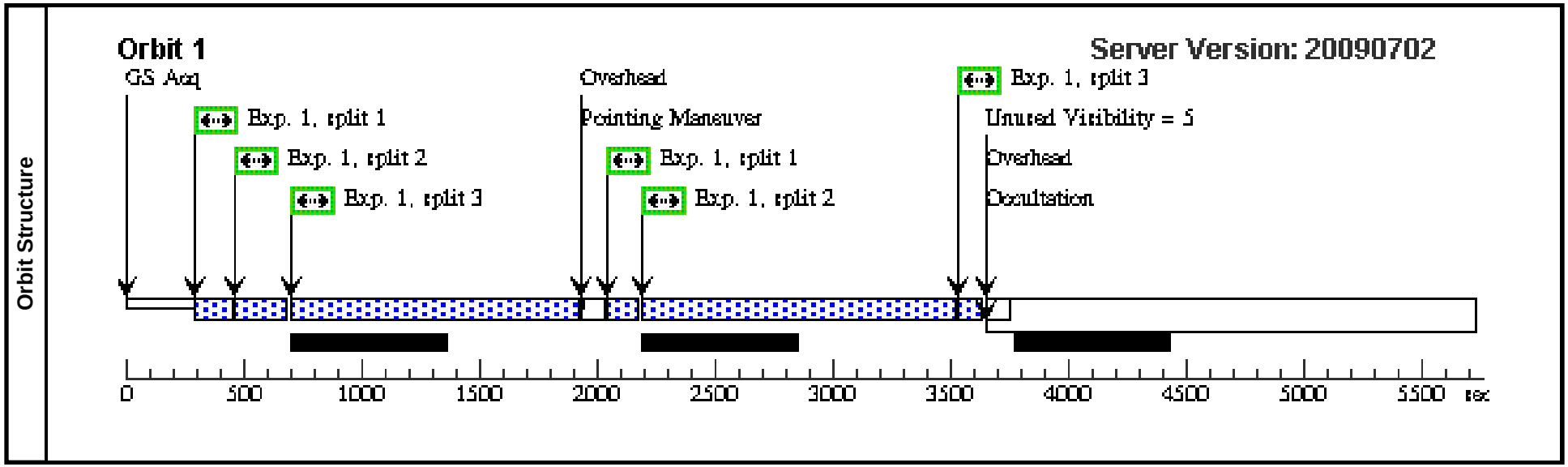
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	NGC-3516	RA: 11 06 47.5000 (166.6979167d) Dec: +72 34 7.00 (72.56861d) Equinox: J2000		V=(?) B = 12.5	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the NED database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(2) NGC-3516	WFC3/UVIS, ACCUM, UVIS-FIX	F547M	CR-SPLIT=3		Pattern 1, Exps 1-1 (1)	2000 Secs *[==>10 Secs (Pattern 1, Split 1)]* *[==>100 Secs (Pattern 1, Split 2)]* *[==>1220.0 Secs (Pattern 1, Split 3)]* *[==>10 Secs (Pattern 2, Split 1)]* *[==>1220.0 Secs (Pattern 2, Split 2)]* *[==>100 Secs (Pattern 2, Split 3)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20090702
GS Acq
Exp. 1, split 1
Exp. 1, split 2
Exp. 1, split 3
Overhead
Pointing Maneuver
Exp. 1, split 1
Exp. 1, split 2
Exp. 1, split 3
Unused Visibility = 5
Overhead
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11661, Visit 03, implementation Thu Oct 15 01:02:24 GMT 2009

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-MOS-DITH-LINE Purpose=DITHER Number Of Points=2 Point Spacing=4.0 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.754 Angle Between Sides= Center Pattern=true		(1)

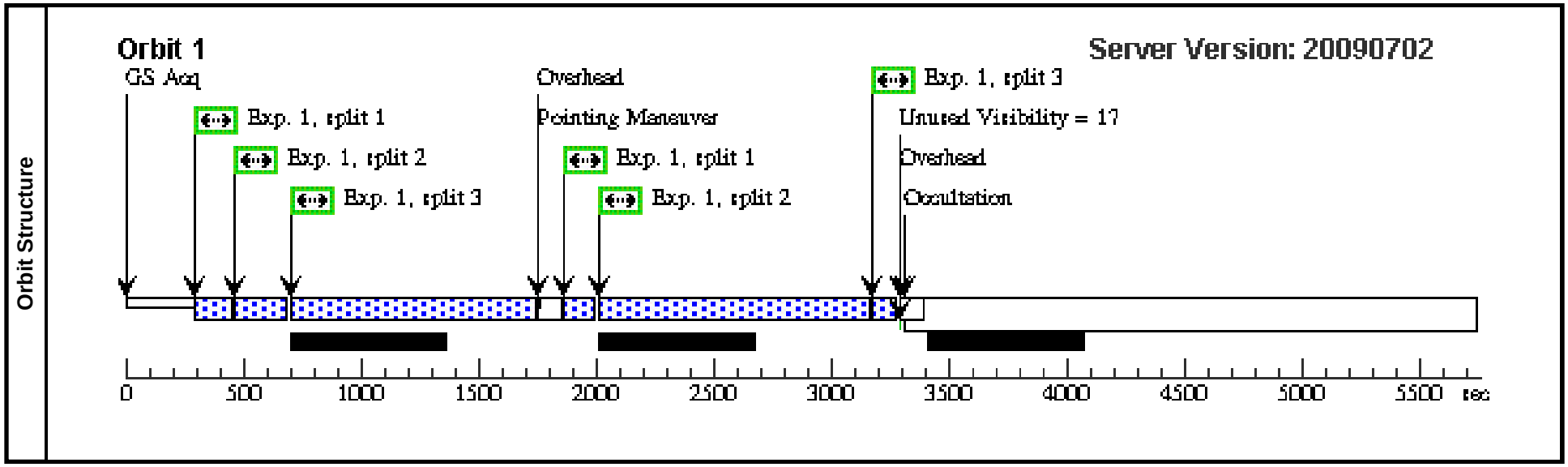
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	NGC-3783	RA: 11 39 1.7000 (174.7570833d) Dec: -37 44 19.00 (-37.73861d) Equinox: J2000		V=(?) B = 12.64	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the NED database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(3) NGC-3783	WFC3/UVIS, ACCUM, UVIS-FIX	F547M	CR-SPLIT=3		Pattern 1, Exps 1-1 (1)	2000 Secs	
								[==>10 Secs (Pattern 1, Split 1)] *[==>100 Secs (Pattern 1, Split 2)]* *[==>1040 Secs (Pattern 1, Split 3)]* *[==>10 Secs (Pattern 2, Split 1)]* *[==>1040 Secs (Pattern 2, Split 2)]* *[==>100 Secs (Pattern 2, Split 3)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20090702
GS Acq
Exp. 1, split 1
Exp. 1, split 2
Exp. 1, split 3
Overhead
Pointing Maneuver
Exp. 1, split 1
Exp. 1, split 2
Exp. 1, split 3
Unused Visibility = 17
Overhead
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11661, Visit 04, implementation Thu Oct 15 01:02:24 GMT 2009

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-MOS-DITH-LINE Purpose=DITHER Number Of Points=2 Point Spacing=4.0 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.754 Angle Between Sides= Center Pattern=true		(1)

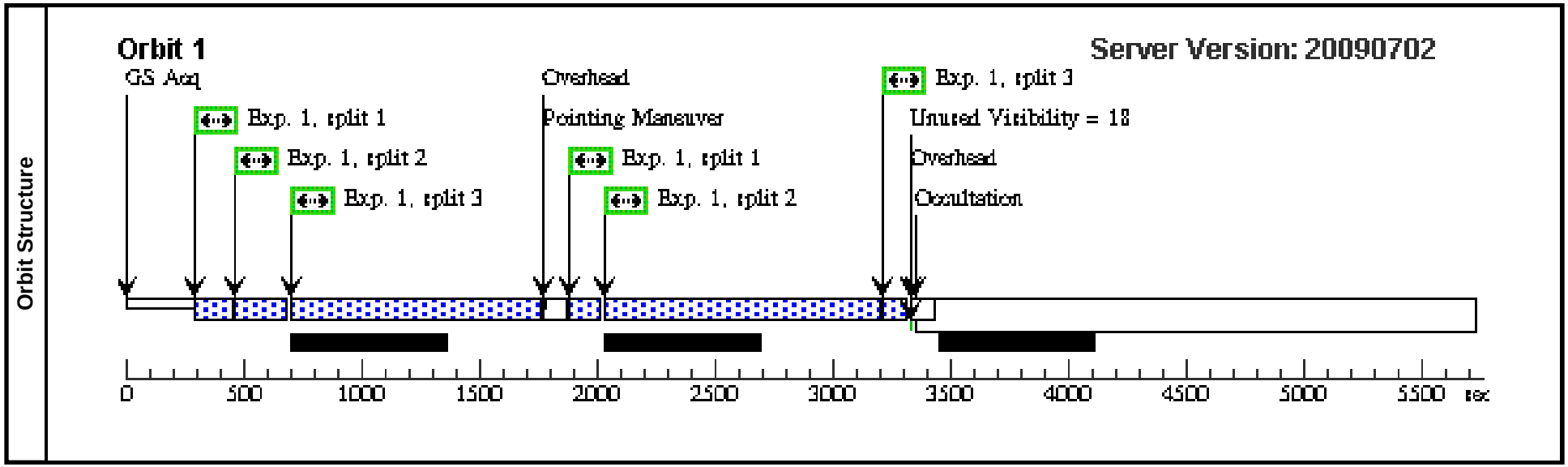
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	NGC-4051	RA: 12 03 9.6000 (180.7900000d) Dec: +44 31 53.00 (44.53139d) Equinox: J2000		V=(?) B = 10.83	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the NED database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(4) NGC-4051	WFC3/UVIS, ACCUM, UVIS-FIX	F547M	CR-SPLIT=3		Pattern 1, Exps 1-1 (1)	2000 Secs	
								[==>10 Secs (Pattern 1, Split 1)] *[==>100 Secs (Pattern 1, Split 2)]* *[==>1060.0 Secs (Pattern 1, Split 3)]* *[==>10 Secs (Pattern 2, Split 1)]* *[==>1060.0 Secs (Pattern 2, Split 2)]* *[==>100 Secs (Pattern 2, Split 3)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20090702
GS Acq
Exp. 1, split 1
Exp. 1, split 2
Exp. 1, split 3
Overhead
Pointing Maneuver
Exp. 1, split 1
Exp. 1, split 2
Exp. 1, split 3
Unused Visibility = 18
Overhead
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11661, Visit 05, implementation Thu Oct 15 01:02:25 GMT 2009

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-MOS-DITH-LINE Purpose=DITHER Number Of Points=2 Point Spacing=4.0 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.754 Angle Between Sides= Center Pattern=true		(1)

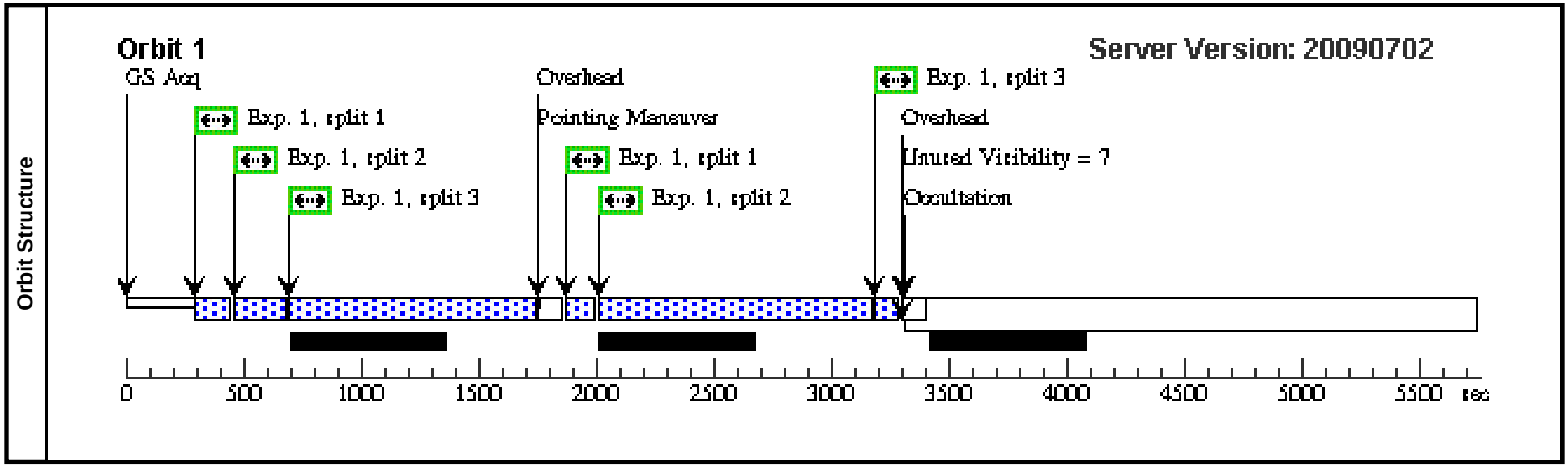
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(5)	NGC-4151	RA: 12 10 32.6000 (182.6358333d) Dec: +39 24 21.00 (39.40583d) Equinox: J2000		V=(?) B = 11.5	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the NED database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(5) NGC-4151	WFC3/UVIS, ACCUM, UVIS-FIX	F547M	CR-SPLIT=3		Pattern 1, Exps 1-1 (1)	1990 Secs	
								[==>5 Secs (Pattern 1, Split 1)] *[==>100 Secs (Pattern 1, Split 2)]* *[==>1050.0 Secs (Pattern 1, Split 3)]* *[==>5 Secs (Pattern 2, Split 1)]* *[==>1050.0 Secs (Pattern 2, Split 2)]* *[==>100 Secs (Pattern 2, Split 3)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20090702
GS Acq
Exp. 1, split 1
Exp. 1, split 2
Exp. 1, split 3
Overhead
Pointing Maneuver
Exp. 1, split 1
Exp. 1, split 2
Exp. 1, split 3
Overhead
Unused Visibility = 7
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11661, Visit 06, implementation Thu Oct 15 01:02:25 GMT 2009

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-MOS-DITH-LINE Purpose=DITHER Number Of Points=2 Point Spacing=4.0 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.754 Angle Between Sides= Center Pattern=true		(1)

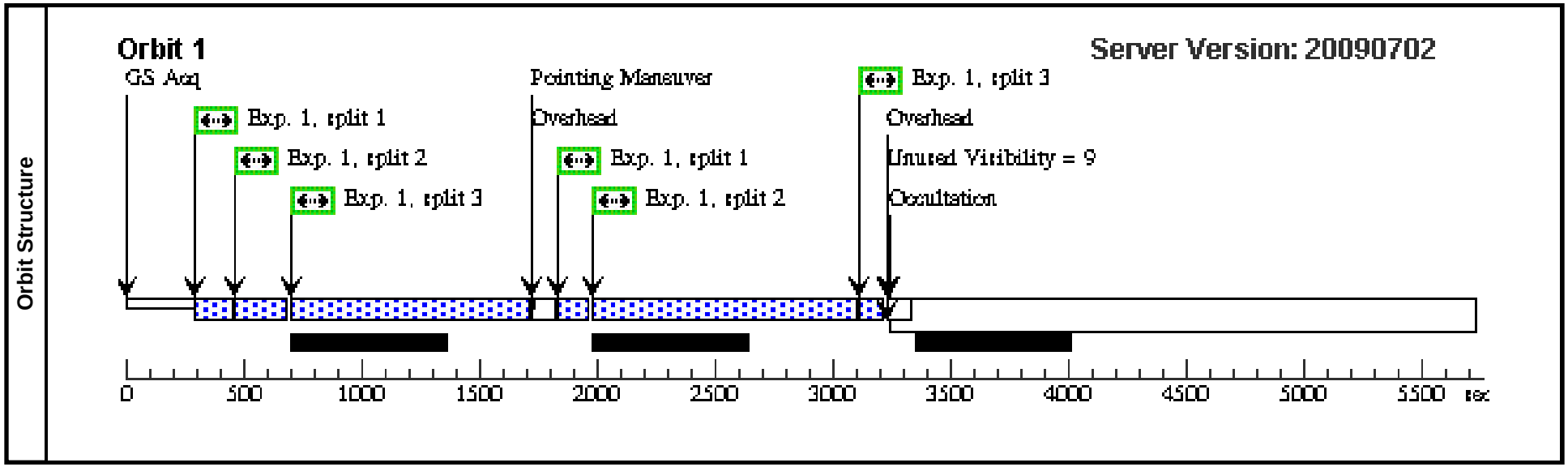
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(6)	NGC-4593	RA: 12 39 39.4000 (189.9141667d) Dec: -05 20 39.00 (-5.34417d) Equinox: J2000		V=(?) B = 11.67	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the NED database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(6) NGC-4593	WFC3/UVIS, ACCUM, UVIS-FIX	F547M	CR-SPLIT=3		Pattern 1, Exps 1-1 (1)	2000 Secs	
								[==>10 Secs (Pattern 1, Split 1)] *[==>100 Secs (Pattern 1, Split 2)]* *[==>1010.0 Secs (Pattern 1, Split 3)]* *[==>10 Secs (Pattern 2, Split 1)]* *[==>1010.0 Secs (Pattern 2, Split 2)]* *[==>100 Secs (Pattern 2, Split 3)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20090702
GS Acq
Exp. 1, split 1
Exp. 1, split 2
Exp. 1, split 3
Pointing Maneuver
Overhead
Exp. 1, split 1
Exp. 1, split 2
Exp. 1, split 3
Overhead
Unused Visibility = 9
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11661, Visit 07, implementation Thu Oct 15 01:02:25 GMT 2009

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-MOS-DITH-LINE Purpose=DITHER Number Of Points=2 Point Spacing=4.0 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.754 Angle Between Sides= Center Pattern=true		(1)

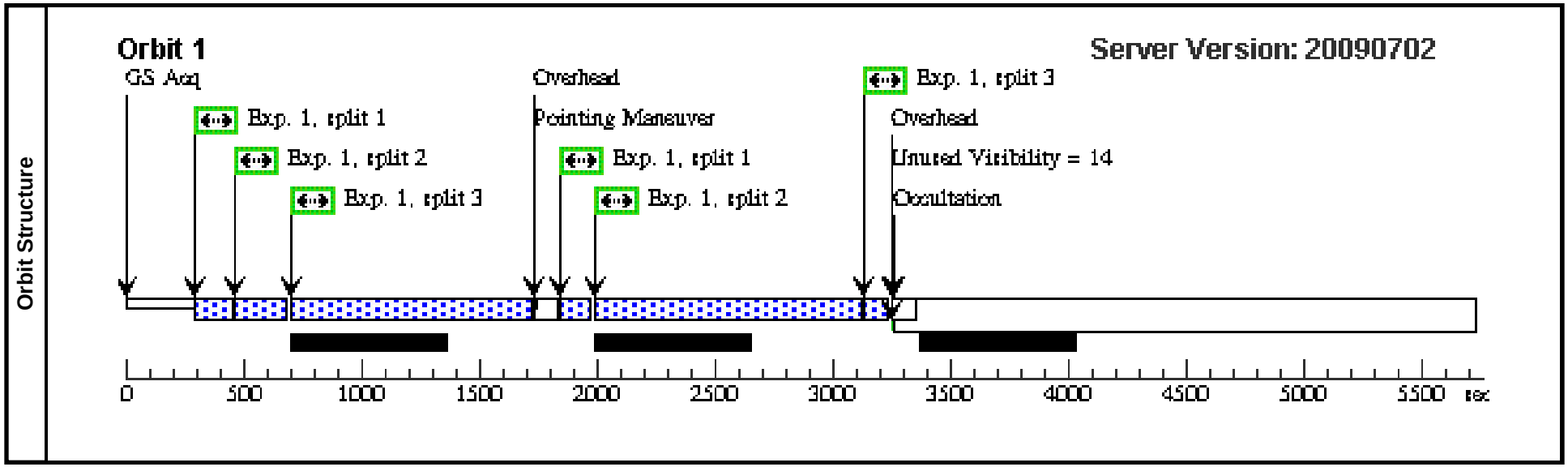
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(7)	NGC-5548	RA: 14 17 59.5000 (214.4979167d) Dec: +25 08 12.00 (25.13667d) Equinox: J2000		V=(?) B = 13.3	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the NED database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(7) NGC-5548	WFC3/UVIS, ACCUM, UVIS-FIX	F547M	CR-SPLIT=3		Pattern 1, Exps 1-1 (1)	2000 Secs *[==>10 Secs (Pattern 1, Split 1)]* *[==>100 Secs (Pattern 1, Split 2)]* *[==>1020.0 Secs (Pattern 1, Split 3)]* *[==>10 Secs (Pattern 2, Split 1)]* *[==>1020.0 Secs (Pattern 2, Split 2)]* *[==>100 Secs (Pattern 2, Split 3)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20090702
GS Acq
Exp. 1, split 1
Exp. 1, split 2
Exp. 1, split 3
Overhead
Pointing Maneuver
Exp. 1, split 1
Exp. 1, split 2
Exp. 1, split 3
Overhead
Unused Visibility = 14
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11661, Visit 08, implementation Thu Oct 15 01:02:26 GMT 2009

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-MOS-DITH-LINE Purpose=DITHER Number Of Points=2 Point Spacing=4.0 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.754 Angle Between Sides= Center Pattern=true		(1)

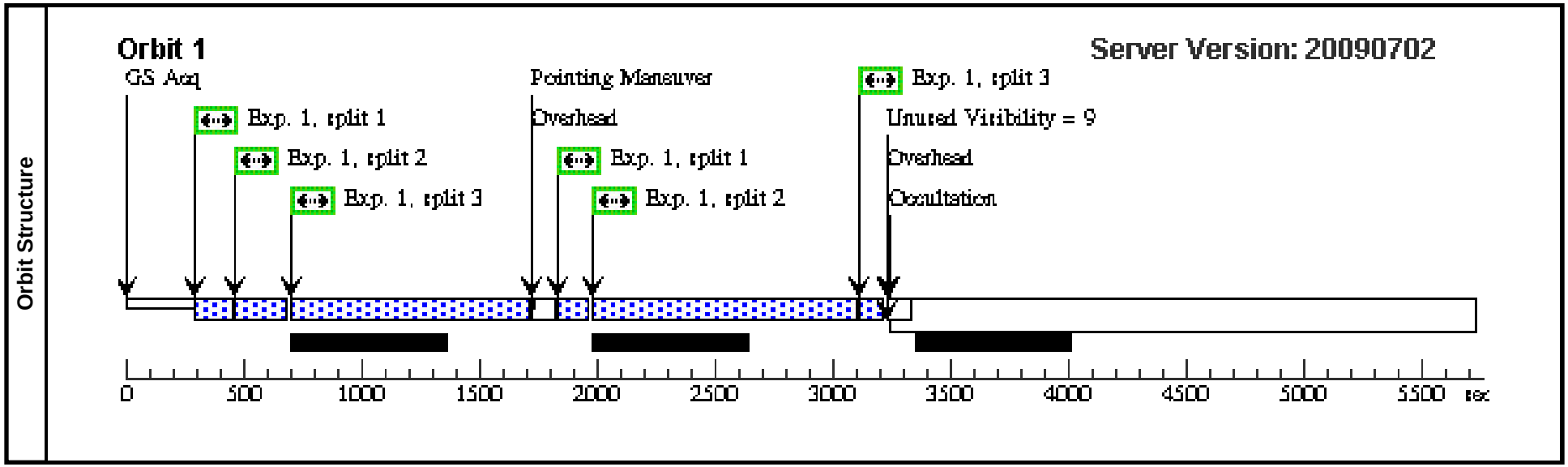
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(8)	NGC-7469	RA: 23 03 15.6000 (345.8150000d) Dec: +08 52 26.00 (8.87389d) Equinox: J2000		V=(?) B = 13.0	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the NED database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(8) NGC-7469	WFC3/UVIS, ACCUM, UVIS-FIX	F547M	CR-SPLIT=3		Pattern 1, Exps 1-1 (1)	2000 Secs	
								[==>10 Secs (Pattern 1, Split 1)] *[==>100 Secs (Pattern 1, Split 2)]* *[==>1010.0 Secs (Pattern 1, Split 3)]* *[==>10 Secs (Pattern 2, Split 1)]* *[==>1010.0 Secs (Pattern 2, Split 2)]* *[==>100 Secs (Pattern 2, Split 3)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20090702
GS Acq
Exp. 1, split 1
Exp. 1, split 2
Exp. 1, split 3
Pointing Maneuver
Overhead
Exp. 1, split 1
Exp. 1, split 2
Exp. 1, split 3
Unused Visibility = 9
Overhead
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11661, Visit 09, implementation Thu Oct 15 01:02:26 GMT 2009

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-MOS-DITH-LINE Purpose=DITHER Number Of Points=2 Point Spacing=4.0 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.754 Angle Between Sides= Center Pattern=true		(1)

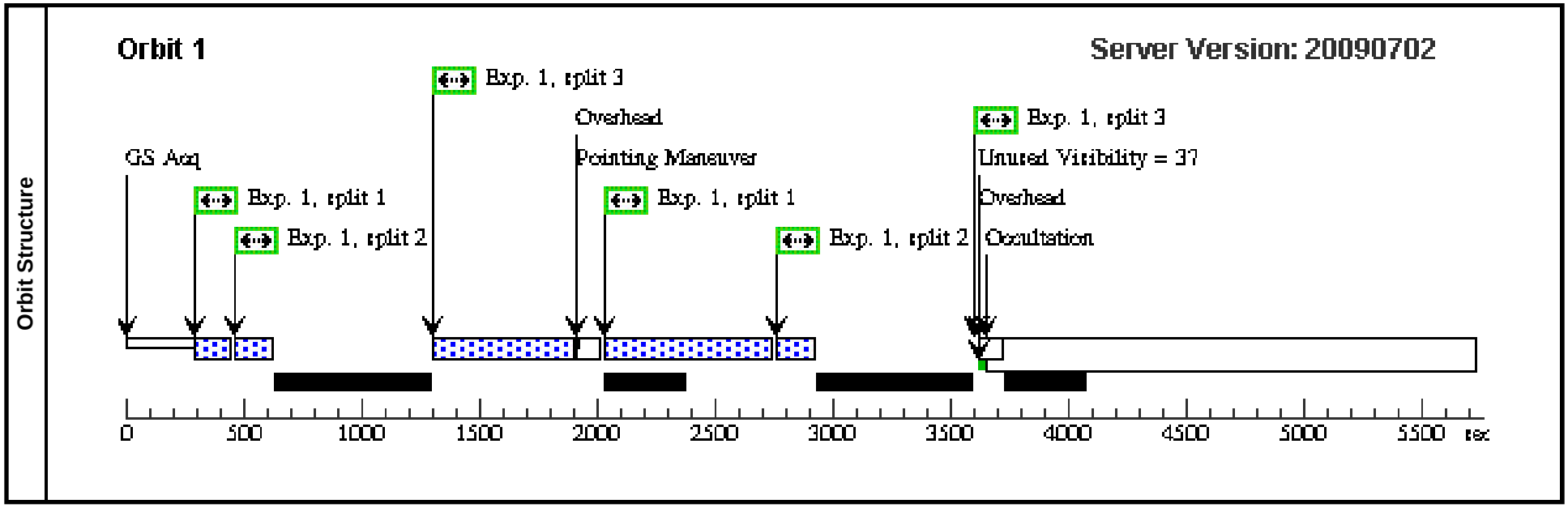
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(9)	EGGR-102	RA: 13 38 50.4743 (204.7103096d) Dec: +70 17 7.62 (70.28545d) Equinox: J2000		V=12.8 white dwarf	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(9) EGGR-102	WFC3/UVIS, ACCUM, UVIS-FIX	F547M	CR-SPLIT=3		Pattern 1, Exps 1-1 (1)	928 Secs *[==>4 Secs (Pattern 1, Split 1)]* *[==>40.0 Secs (Pattern 1, Split 2)]* *[==>600.0 Secs (Pattern 1, Split 3)]* *[==>600 Secs (Pattern 2, Split 1)]* *[==>40.0 Secs (Pattern 2, Split 2)]* *[==>4.0 Secs (Pattern 2, Split 3)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20090702
GS Acq
Exp. 1, split 1
Exp. 1, split 2
Exp. 1, split 3
Overhead
Pointing Maneuver
Exp. 1, split 1
Exp. 1, split 2
Exp. 1, split 3
Unused Visibility = 37
Overhead
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec