



# 13943 - Probing the Growth of Massive Black Holes in Dwarf Galaxies with Chandra and HST

Cycle: 22, Proposal Category: GO  
(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) SDSSJ024656.39-003304.8	WFC3/IR WFC3/UVIS	1	24-Oct-2014 21:03:22.0	yes
02	(2) SDSSJ090613.75+561015.5	WFC3/IR WFC3/UVIS	1	24-Oct-2014 21:03:24.0	yes
03	(3) SDSSJ095418.15+471725.1	WFC3/IR WFC3/UVIS	1	24-Oct-2014 21:03:26.0	yes
04	(4) SDSSJ144012.70+024743.5	WFC3/IR WFC3/UVIS	1	24-Oct-2014 21:03:28.0	yes
05	(5) SDSSJ085125.81+393541.7	WFC3/IR WFC3/UVIS	1	24-Oct-2014 21:03:30.0	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>
06	(6) SDSSJ152637.36+065941.6	WFC3/IR WFC3/UVIS	1	24-Oct-2014 21:03:32.0	yes
07	(7) SDSSJ160531.84+174826.1	WFC3/IR WFC3/UVIS	1	24-Oct-2014 21:03:33.0	yes
08	(8) SDSSJ084029.91+470710.4	WFC3/IR WFC3/UVIS	1	24-Oct-2014 21:03:35.0	yes

8 Total Orbits Used

## ABSTRACT

The study of massive black holes (BHs) in dwarf galaxies can place valuable constraints on the birth and growth of the first supermassive BH seeds. We propose Chandra and HST observations of 8 dwarf galaxies from our recent sample of optically-selected AGN in galaxies with stellar masses comparable to the Magellanic Clouds (Reines et al. 2013). Our target galaxies host broad-line AGN and contain the least-massive BHs known in galaxy nuclei. The proposed observations will enable us to characterize the compact X-ray and UV emission from the AGN, estimate Eddington ratios for the smallest BHs known, and investigate host galaxy properties and BH scaling relations at the sparsely populated low-mass end.

## OBSERVING DESCRIPTION

### UVIS F275W:

Our UV observations are designed to detect a moderately accreting low-mass AGN. Assuming a BH mass of  $\sim 10^5$  Msun, an Eddington ratio of a few percent, and a UV-bolometric correction of 10 gives an expected UV luminosity of  $\sim 3e40$  erg/s. At a mean distance of our sample ( $\sim 150$  Mpc), this corresponds to a flux density of  $\sim 4e-18$  erg/s/cm<sup>2</sup>/Ang at 2700 Ang. To detect such a point source with a S/N  $\sim 10$ , the WFC3/UVIS exposure time calculator suggests we need  $\sim 750$  s in F275W with post-flash=12 to avoid poor charge transfer efficiency. We will break the total time into 3 dithered exposures to facilitate cosmic-ray rejection, avoid bad pixels, and improve the PSF sampling. Since our target galaxies are quite compact, we will use a 1kx1k subarray to avoid buffer dumps and reduce readout overhead. Chip 2 will be used since it is more sensitive than chip 1.

### UVIS F606W:

We will use the F606W optical filter to bridge the gap between our UV and near-IR observations and obtain important color diagnostics. To ensure

## Proposal 13943 (STScI Edit Number: 0, Created: Friday, October 24, 2014 8:03:37 PM EST) - Overview

we can accurately separate bulge and disk components, we aim to reach a 10-sigma surface-brightness sensitivity of  $\mu_r \sim 23 \text{ mag/arcsec}^2$  in a  $7 \times 7$  pixel box (roughly equivalent to  $2 \times 2$  IR pixels). The WFC/UVIS exposure time calculator suggests we need  $\sim 600$  s in F606W. We will break the total time into 3 dithered exposures and use the  $2k \times 2k$  subarray with chip 2.

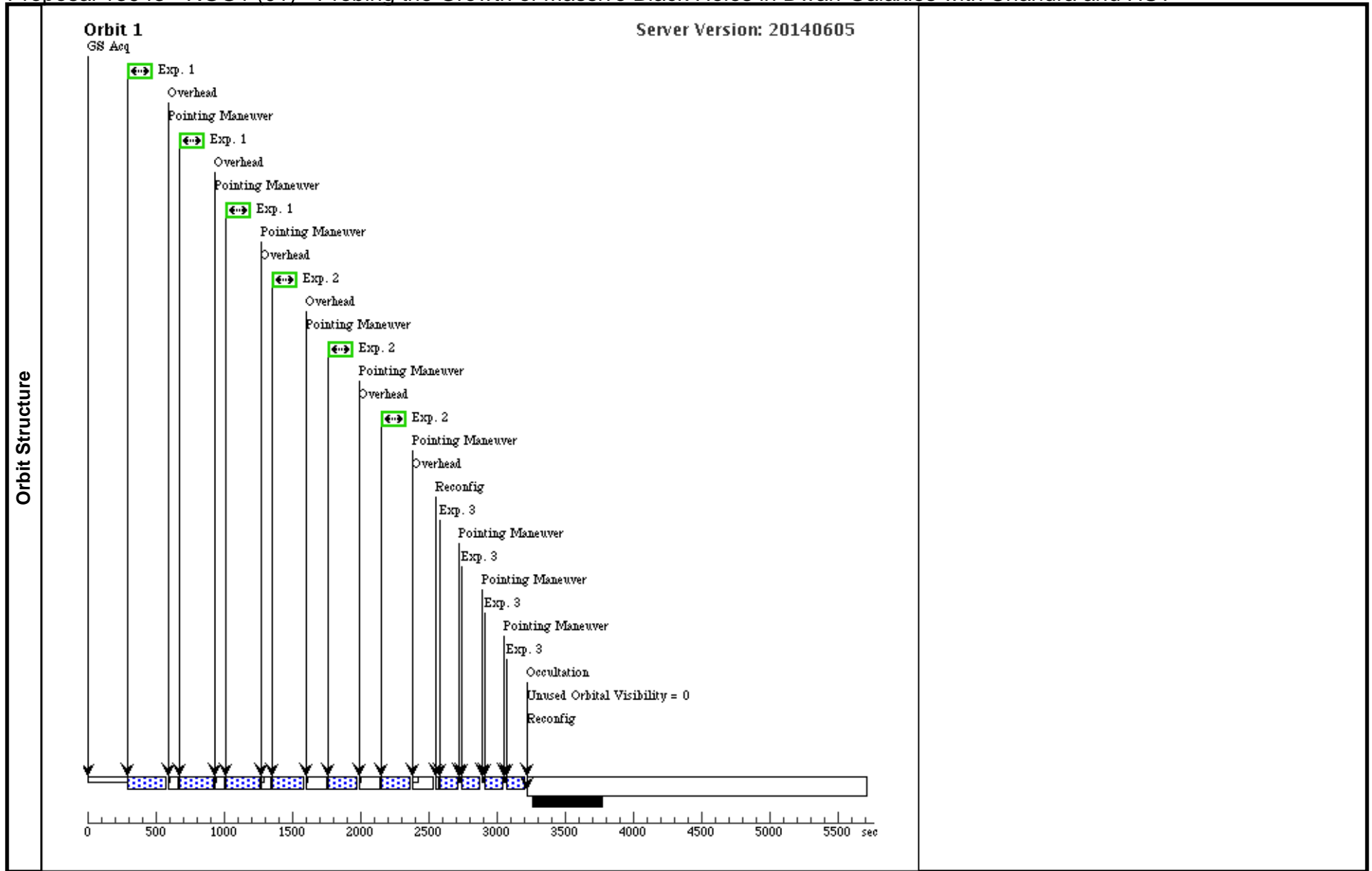
### IR/F110W:

Based on surface brightness profiles of our faintest targets, we wish to reach a 10-sigma surface-brightness sensitivity of  $\mu_r \sim 23 \text{ mag/arcsec}^2$  in a given pixel. Prior experience suggests that we will be able to reach at least a magnitude deeper with radial averaging than our per-pixel depth. This will allow us to detect the outer parts of the disks in our target galaxies, which is necessary to adequately decouple bulge and disk components on small scales. According to the WFC3/IR exposure time calculator, we need  $\sim 400$  s to reach our required sensitivity in F110W. We will break the total time into 4 dithered exposures to improve the PSF sampling and avoid bad pixels. We will use the timing sequence STEP25 with NSAMP=9 ( $\sim 100$  s per exposure) to increase our dynamic range, avoid potential saturation from AGN and allow the use of the IRSUB512 subarray to avoid buffer dumps. Our galaxies are quite compact so using a subarray will not compromise our science or limit our sky subtraction.

Proposal 13943 - RGG1 (01) - Probing the Growth of Massive Black Holes in Dwarf Galaxies with Chandra and HST

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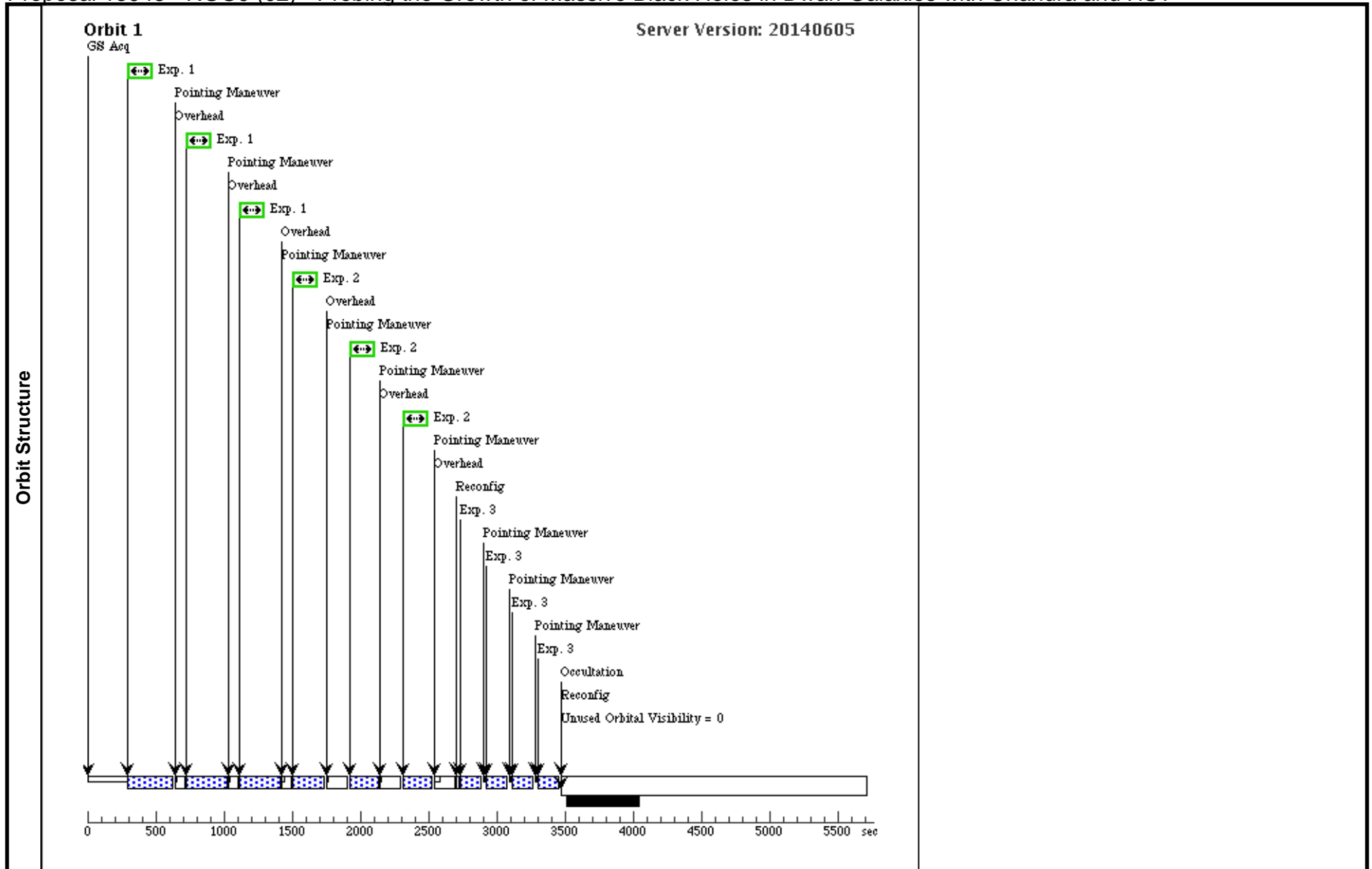
Visit	<b>Proposal 13943, RGG1 (01)</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/IR, WFC3/UVIS Special Requirements: (none)									
	#	Primary Pattern	Secondary Pattern	Exposures						
Patterns	(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(1), (2)						
	(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		(3)						
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	SDSSJ024656.39-003304.8	RA: 02 46 56.4000 (41.7350000d) Dec: -00 33 4.90 (-.55136d) Equinox: J2000		V=(?) SDSS u=20.4, g=18.9, z=17.4	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F275W	(1) SDSSJ024656.39-003304.8	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F275W	FLASH=12		Pattern 1, Exps 1-1 in RGG1 (01) (1)	249 Secs (747 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]
	2	F606W	(1) SDSSJ024656.39-003304.8	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W			Pattern 1, Exps 2-2 in RGG1 (01) (1)	215 Secs (645 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]
	3	F110W	(1) SDSSJ024656.39-003304.8	WFC3/IR, MULTIACCUM, IRSUB512	F110W	NSAMP=9; SAMP-SEQ=STEP2 5		Pattern 2, Exps 3-3 in RGG1 (01) (2)	105.518395 Secs (422.074 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]	[1]



Proposal 13943 - RGG9 (02) - Probing the Growth of Massive Black Holes in Dwarf Galaxies with Chandra and HST

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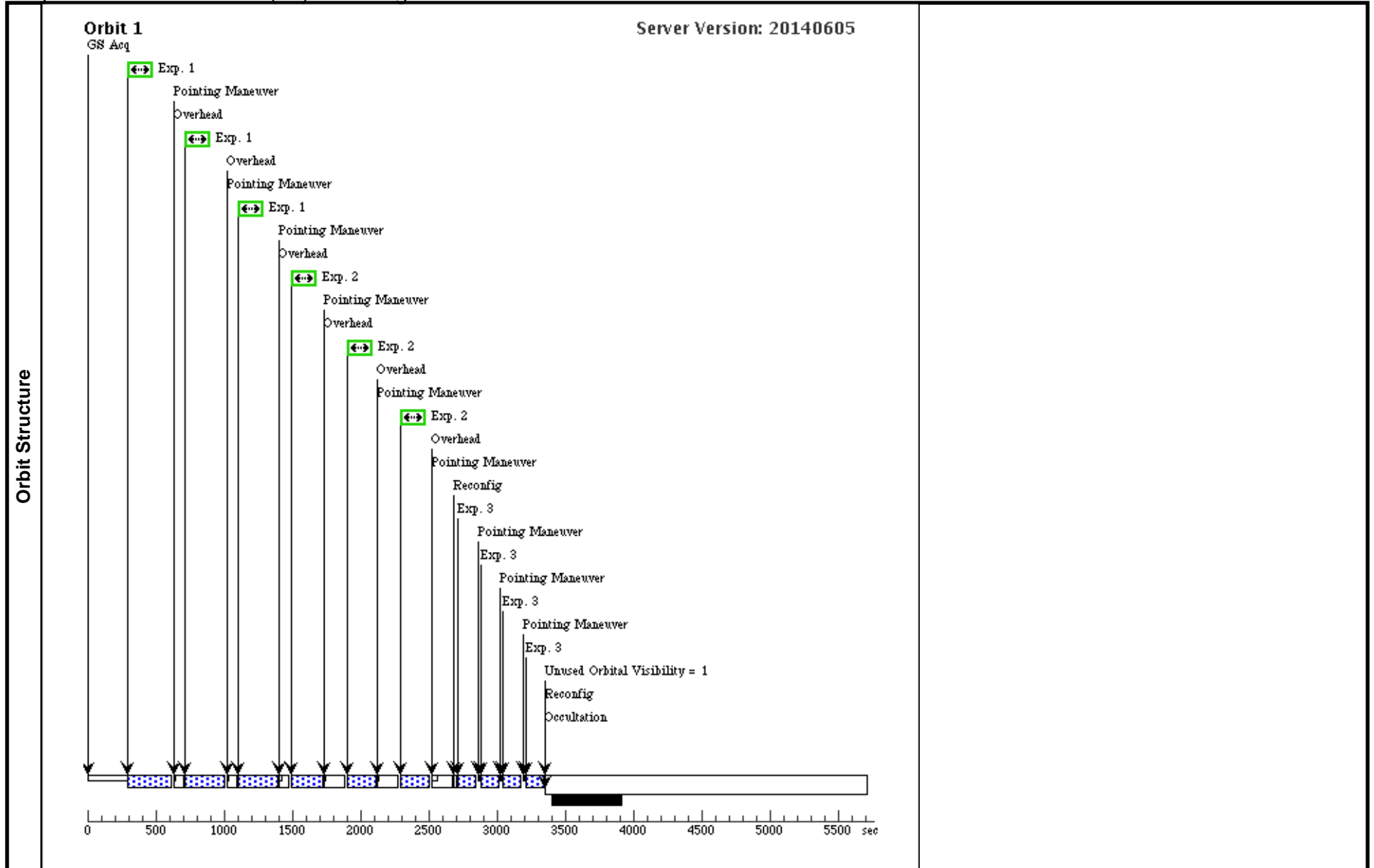
Visit	<b>Proposal 13943, RGG9 (02)</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/IR, WFC3/UVIS Special Requirements: (none)									
	#	Primary Pattern	Secondary Pattern	Exposures						
Patterns	(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(1), (2)						
	(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		(3)						
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(2)	SDSSJ090613.75+561015.5	RA: 09 06 13.8000 (136.5575000d) Dec: +56 10 15.50 (56.17097d) Equinox: J2000		V=(?) SDSS u=19.1, g=17.8, z=16.9	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F275W	(2) SDSSJ090613.75+561015.5	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F275W	FLASH=12		Pattern 1, Exps 1-1 in RGG9 (02) (1)	300 Secs (900 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]
	2	F606W	(2) SDSSJ090613.75+561015.5	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W			Pattern 1, Exps 2-2 in RGG9 (02) (1)	216 Secs (648 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]
	3	F110W	(2) SDSSJ090613.75+561015.5	WFC3/IR, MULTIACCUM, IRSUB512	F110W	NSAMP=10; SAMP-SEQ=STEP2 5		Pattern 2, Exps 3-3 in RGG9 (02) (2)	128.439646 Secs (513.759 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]	[1]



Proposal 13943 - RGG11 (03) - Probing the Growth of Massive Black Holes in Dwarf Galaxies with Chandra and HST

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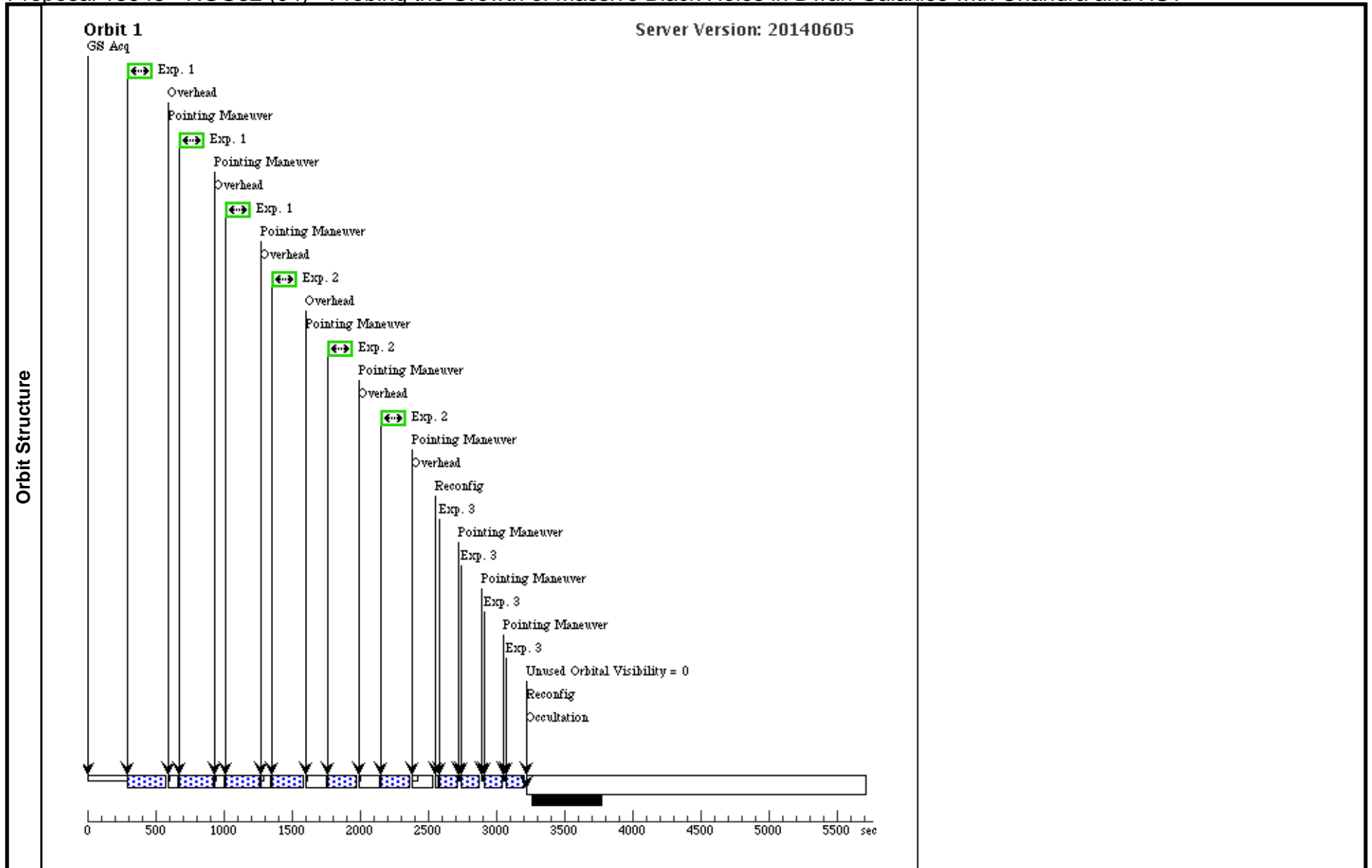
Visit	<b>Proposal 13943, RGG11 (03)</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/IR, WFC3/UVIS Special Requirements: (none)									
	#	Primary Pattern	Secondary Pattern	Exposures						
Patterns	(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false	(1), (2)						
	(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	(3)						
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(3)	SDSSJ095418.15+471725.1	RA: 09 54 18.2000 (148.5758333d) Dec: +47 17 25.10 (47.29031d) Equinox: J2000		V=(?) SDSS u=18.3, g=17.2, z=16.3	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F275W	(3) SDSSJ095418.15+471725.1	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F275W	FLASH=12		Pattern 1, Exps 1-1 in RGG11 (03) (1)	294 Secs (882 Secs)	
									[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]
	2	F606W	(3) SDSSJ095418.15+471725.1	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W			Pattern 1, Exps 2-2 in RGG11 (03) (1)	215 Secs (645 Secs)	
								[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]	
3	F110W	(3) SDSSJ095418.15+471725.1	WFC3/IR, MULTIACCUM, IRSUB512	F110W	NSAMP=9; SAMP-SEQ=STEP2 5			Pattern 2, Exps 3-3 in RGG11 (03) (2)	105.518395 Secs (422.074 Secs)	
								[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]	[1]	



Proposal 13943 - RGG32 (04) - Probing the Growth of Massive Black Holes in Dwarf Galaxies with Chandra and HST

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Visit	<b>Proposal 13943, RGG32 (04)</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/IR, WFC3/UVIS Special Requirements: (none)									
	#	Primary Pattern	Secondary Pattern	Exposures						
Patterns	(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false	(1), (2)						
	(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	(3)						
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(4)	SDSSJ144012.70+024743.5	RA: 14 40 12.7000 (220.0529167d) Dec: +02 47 43.50 (2.79542d) Equinox: J2000		V=(?) SDSS u=17.8, g=16.7, z=15.8	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F275W	(4) SDSSJ144012.70+024743.5	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F275W	FLASH=12		Pattern 1, Exps 1-1 in RGG32 (04) (1)	249 Secs (747 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]
	2	F606W	(4) SDSSJ144012.70+024743.5	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W			Pattern 1, Exps 2-2 in RGG32 (04) (1)	215 Secs (645 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]
	3	F110W	(4) SDSSJ144012.70+024743.5	WFC3/IR, MULTIACCUM, IRSUB512	F110W	NSAMP=9; SAMP-SEQ=STEP25		Pattern 2, Exps 3-3 in RGG32 (04) (2)	105.518395 Secs (422.074 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]	[1]



Proposal 13943 - RGG48 (05) - Probing the Growth of Massive Black Holes in Dwarf Galaxies with Chandra and HST

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Visit	<b>Proposal 13943, RGG48 (05)</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/IR, WFC3/UVIS Special Requirements: (none)									
	#	Primary Pattern	Secondary Pattern	Exposures						
Patterns	(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false	(1), (2)						
	(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	(3)						
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(5)	SDSSJ085125.81+393541.7	RA: 08 51 25.8000 (132.8575000d) Dec: +39 35 41.70 (39.59492d) Equinox: J2000		V=(?) SDSS u=18.2, g=17.3, z=16.6	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F275W	(5) SDSSJ085125.81+393541.7	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F275W	FLASH=12		Pattern 1, Exps 1-1 in RGG48 (05) (1)	267 Secs (801 Secs)	
									[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]
	2	F606W	(5) SDSSJ085125.81+393541.7	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W			Pattern 1, Exps 2-2 in RGG48 (05) (1)	215 Secs (645 Secs)	
								[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]	
3	F110W	(5) SDSSJ085125.81+393541.7	WFC3/IR, MULTIACCUM, IRSUB512	F110W	NSAMP=9; SAMP-SEQ=STEP2 5			Pattern 2, Exps 3-3 in RGG48 (05) (2)	105.518395 Secs (422.074 Secs)	
								[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]	[1]	



Proposal 13943 - RGG119 (06) - Probing the Growth of Massive Black Holes in Dwarf Galaxies with Chandra and HST

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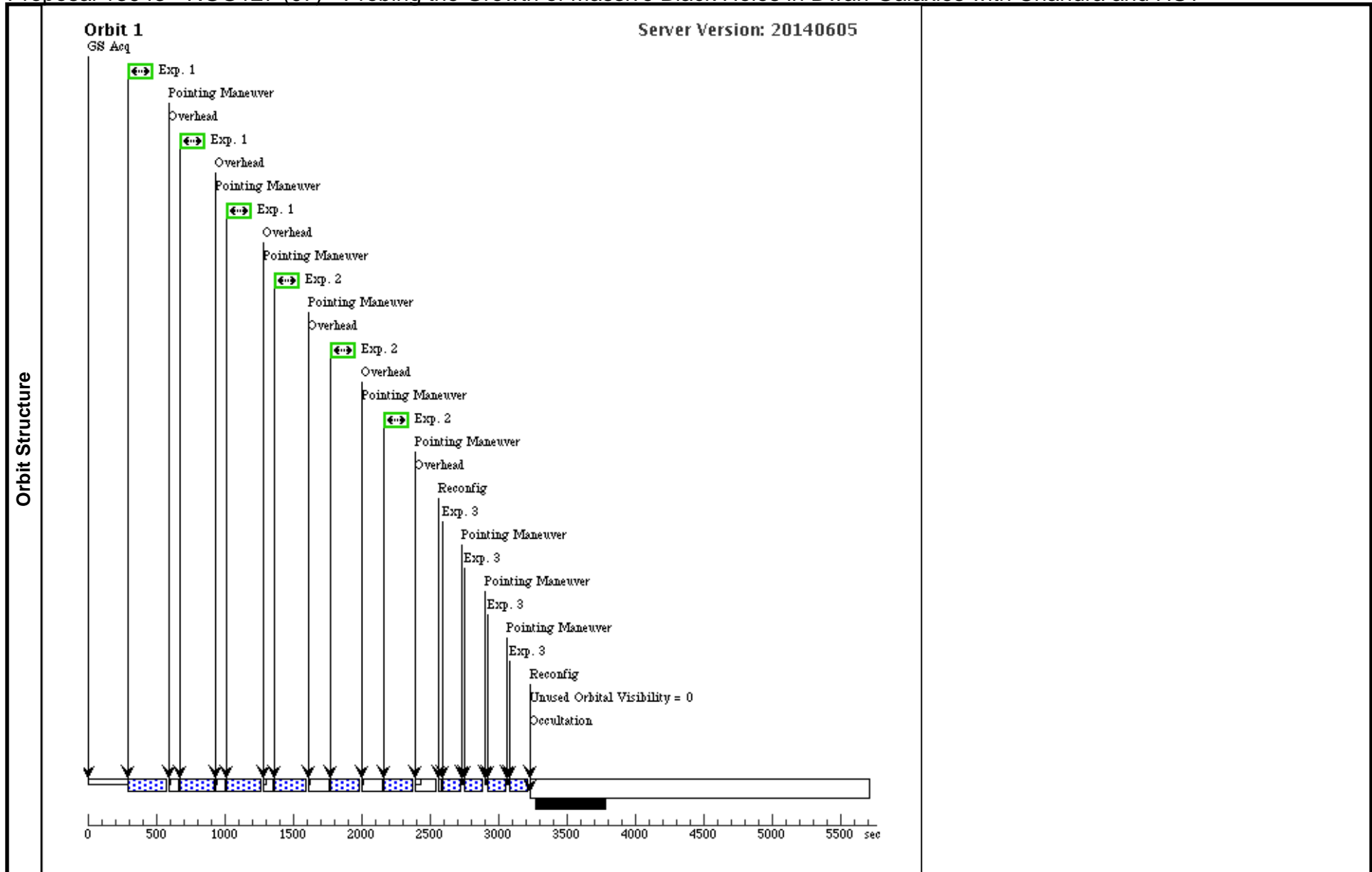
Visit	<b>Proposal 13943, RGG119 (06)</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/IR, WFC3/UVIS Special Requirements: (none)									
	#	Primary Pattern	Secondary Pattern	Exposures						
Patterns	(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(1), (2)						
	(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		(3)						
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(6)	SDSSJ152637.36+065941.6	RA: 15 26 37.4000 (231.6558333d) Dec: +06 59 41.70 (6.99492d) Equinox: J2000		V=(?) SDSS u=18.8, g=17.9, z=17.0	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F275W	(6) SDSSJ152637.36+065941.6	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F275W	FLASH=12		Pattern 1, Exps 1-1 in RGG119 (06) (1)	249 Secs (747 Secs)	
									[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]
	2	F606W	(6) SDSSJ152637.36+065941.6	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W			Pattern 1, Exps 2-2 in RGG119 (06) (1)	215 Secs (645 Secs)	
								[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]	
3	F110W	(6) SDSSJ152637.36+065941.6	WFC3/IR, MULTIACCUM, IRSUB512	F110W	NSAMP=9; SAMP-SEQ=STEP2 5			Pattern 2, Exps 3-3 in RGG119 (06) (2)	105.518395 Secs (422.074 Secs)	
								[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]	[1]	



Proposal 13943 - RGG127 (07) - Probing the Growth of Massive Black Holes in Dwarf Galaxies with Chandra and HST

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Visit	<b>Proposal 13943, RGG127 (07)</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/IR, WFC3/UVIS Special Requirements: (none)									
	#	Primary Pattern	Secondary Pattern	Exposures						
Patterns	(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false	(1), (2)						
	(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	(3)						
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(7)	SDSSJ160531.84+174826.1	RA: 16 05 31.8000 (241.3825000d) Dec: +17 48 26.20 (17.80728d) Equinox: J2000		V=(?) SDSS u=20.0, g=18.6, z=17.2	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F275W	(7) SDSSJ160531.84+174826.1	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F275W	FLASH=12		Pattern 1, Exps 1-1 in RGG127 (07) (1)	252 Secs (756 Secs)	
									[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]
	2	F606W	(7) SDSSJ160531.84+174826.1	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W			Pattern 1, Exps 2-2 in RGG127 (07) (1)	215 Secs (645 Secs)	
								[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]	
3	F110W	(7) SDSSJ160531.84+174826.1	WFC3/IR, MULTIACCUM, IRSUB512	F110W		NSAMP=9; SAMP-SEQ=STEP2 5		Pattern 2, Exps 3-3 in RGG127 (07) (2)	105.518395 Secs (422.074 Secs)	
								[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]	[1]	



Proposal 13943 - RGGB (08) - Probing the Growth of Massive Black Holes in Dwarf Galaxies with Chandra and HST

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Visit	Proposal 13943, RGGB (08)				Diagnostic Status: No Diagnostics		Scientific Instruments: WFC3/IR, WFC3/UVIS		Special Requirements: (none)	
	#	Primary Pattern	Secondary Pattern	Exposures						
Patterns	(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(1), (2)						
	(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		(3)						
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(8)	SDSSJ084029.91+470710.4	RA: 08 40 29.9000 (130.1245833d) Dec: +47 07 10.40 (47.11956d) Equinox: J2000		V=(?) SDSS u=18.4, g=17.6, z=18.6	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F275W	(8) SDSSJ084029.91+470710.4	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F275W	FLASH=12		Pattern 1, Exps 1-1 in RGGB (08) (1)	263 Secs (789 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]
	2	F606W	(8) SDSSJ084029.91+470710.4	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W			Pattern 1, Exps 2-2 in RGGB (08) (1)	215 Secs (645 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]
3	F110W	(8) SDSSJ084029.91+470710.4	WFC3/IR, MULTIACCUM, IRSUB512	F110W	NSAMP=10; SAMP-SEQ=STEP2 5			Pattern 2, Exps 3-3 in RGGB (08) (2)	128.439646 Secs (513.759 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]	[1]

