



12747 - Constraining the irradiated disk and the nature of the companion star in an ultraluminous X-ray source

Cycle: 19, 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) HOLMBERGIX-X1	WFC3/IR WFC3/UVIS	3	30-Aug-2012 21:01:45.0	yes
51	(1) HOLMBERGIX-X1	WFC3/IR WFC3/UVIS	3	30-Aug-2012 21:02:37.0	yes

6 Total Orbits Used

ABSTRACT

Previous HST observations of the ultraluminous X-ray source Holmberg IX X-1 show that its optical emission may be dominated at short wavelengths by an irradiated accretion disk and at long wavelengths by a late-type (super)giant star which would be the donor star in the system. This makes of Holmberg IX X-1 one of the few ULXs where we have a direct, observational hint about the presence of a companion star. We propose X-

ray and UV to NIR observations with Chandra and HST/WFC3. The X-ray spectrum will be essential at modeling the disk emission and, combined with UV/optical measurements, will allow us to constrain the irradiation in the disk. Longer wavelengths will enable us to definitely identify the red excess emission as coming from the donor star or from some structure from the disk.

OBSERVING DESCRIPTION

The observations consist of one simultaneous Chandra/HST observation. We will observe using the WFC3/UVIS instrument in the F225W, F336W, F438W, F547M, F621M, F689M, F763M, F845M filters. We will also make use of WFC3/IR to perform observations in the F098M, F125W and F160W filters.

REAL TIME JUSTIFICATION

Holmberg IX X-1 is known to be variable in X-rays and in the optical, on timescales of days (and less). Thus, for a reliable modeling of the spectral energy distribution, we need the HST observations to be simultaneous with the 15 ks Chandra observation (Chandra proposal 13400775).

Proposal 12747 - Visit 01 - Constraining the irradiated disk and the nature of the companion star in an ultraluminous X-ray source

Fri Aug 31 01:02:51 GMT 2012

Visit	Proposal 12747, Visit 01, failed Diagnostic Status: Warning Scientific Instruments: WFC3/IR, WFC3/UVIS Special Requirements: (none) <i>Comments: This visit should be scheduled to occur during the 15,000 second duration of the corresponding Chandra observation (Chandra Seq: 401413 ObsId: 13728, see Chandra proposal 13400775).</i>					
	Diagnosics (Visit 01) Warning (Orbit Planner): VISIBILITY OVERRUN (Visit 01) Warning (Orbit Planner): VISIBILITY OVERRUN (Visit 01) Warning (Orbit Planner): VISIBILITY OVERRUN					
Patterns	#	Primary Pattern	Secondary Pattern	Exposures		
	(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), (3), (4), (5), (6), (8), (9)		
	(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	(7), (10), (11)		
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	HOLMBERGIX-X1	RA: 09 57 53.3000 (149.4720833d) Dec: +69 03 48.10 (69.06336d) Equinox: J2000		V=22.6+/-0.1	Reference Frame: ICRS

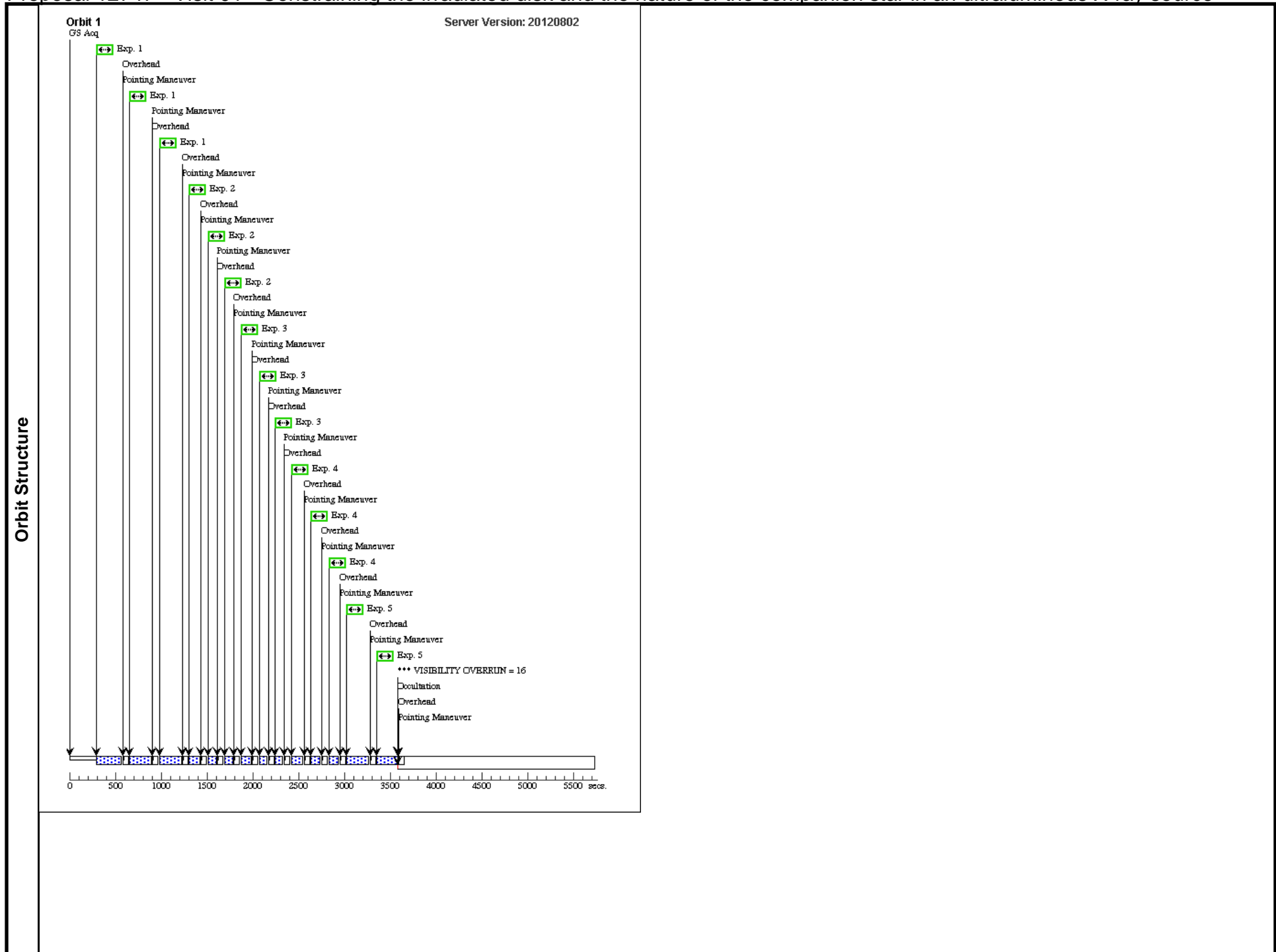
Proposal 12747 - Visit 01 - Constraining the irradiated disk and the nature of the companion star in an ultraluminous X-ray source

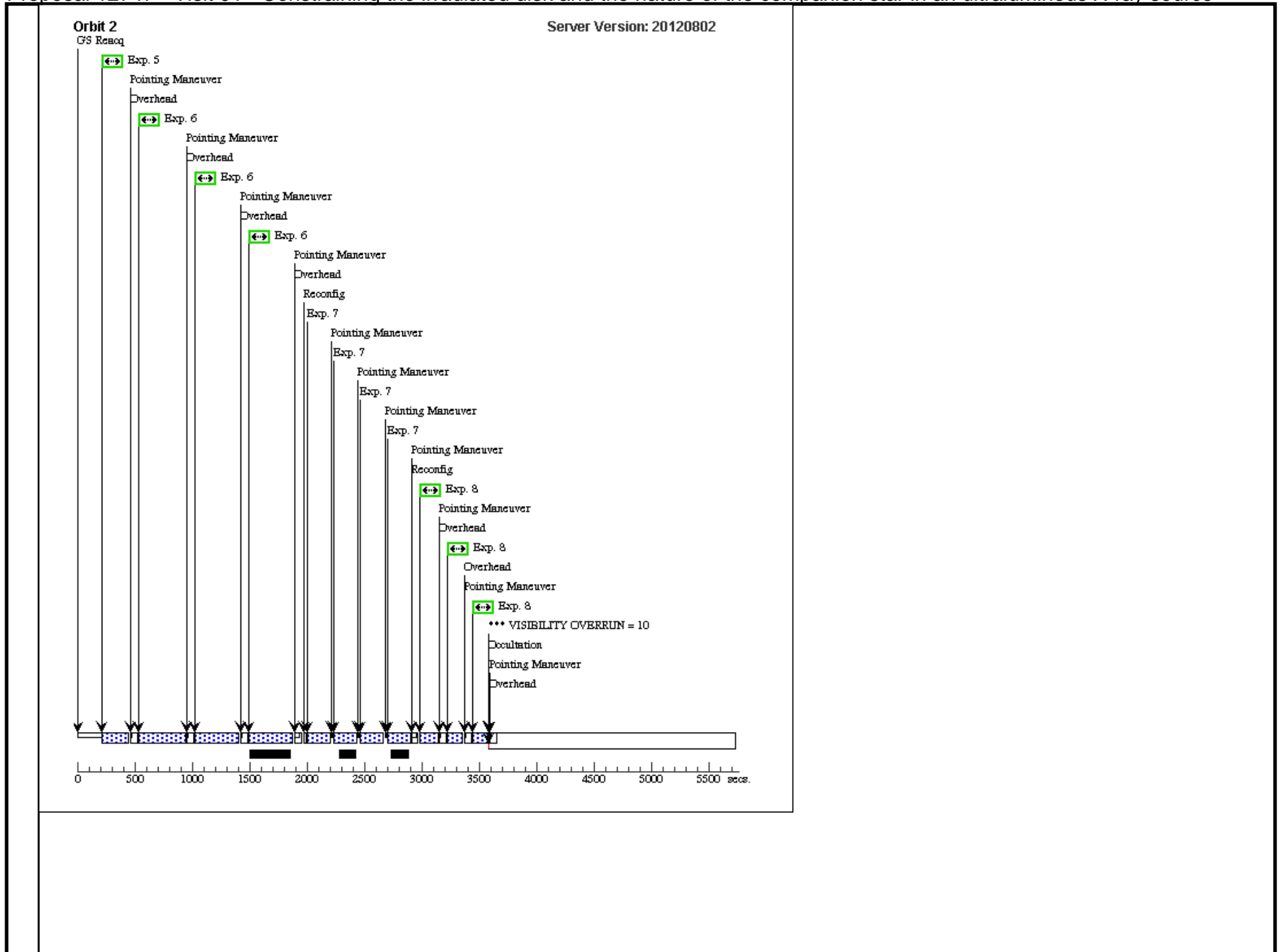
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
Exposures	1	(1) HOLMBERGIX-X1	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F225W			Pattern 1, Exps 1-1 in Visit 01 (1)	240 Secs [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[1]
	2	(1) HOLMBERGIX-X1	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F336W			Pattern 1, Exps 2-2 in Visit 01 (1)	90 Secs [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[1]
	3	(1) HOLMBERGIX-X1	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F438W			Pattern 1, Exps 3-3 in Visit 01 (1)	85 Secs [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[1]
	4	(1) HOLMBERGIX-X1	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F547M			Pattern 1, Exps 4-4 in Visit 01 (1)	105 Secs [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[1]
	5	(1) HOLMBERGIX-X1	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F763M			Pattern 1, Exps 5-5 in Visit 01 (1)	230 Secs [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[1] [2]
	6	(1) HOLMBERGIX-X1	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F845M			Pattern 1, Exps 6-6 in Visit 01 (1)	385 Secs [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[2]
	7	(1) HOLMBERGIX-X1	WFC3/IR, MULTIACCUM, IRSUB512	F125W	SAMP-SEQ=STEP25; NSAMP=12		Pattern 2, Exps 7-7 in Visit 01 (2)	[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[2]
	8	(1) HOLMBERGIX-X1	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F621M			Pattern 1, Exps 8-8 in Visit 01 (1)	130 Secs [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[2]
	9	(1) HOLMBERGIX-X1	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F689M			Pattern 1, Exps 9-9 in Visit 01 (1)	180 Secs [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[3]
	10	(1) HOLMBERGIX-X1	WFC3/IR, MULTIACCUM, IRSUB512	F098M	SAMP-SEQ=STEP25; NSAMP=13		Pattern 2, Exps 10-10 in Visit 01 (2)	[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[3]

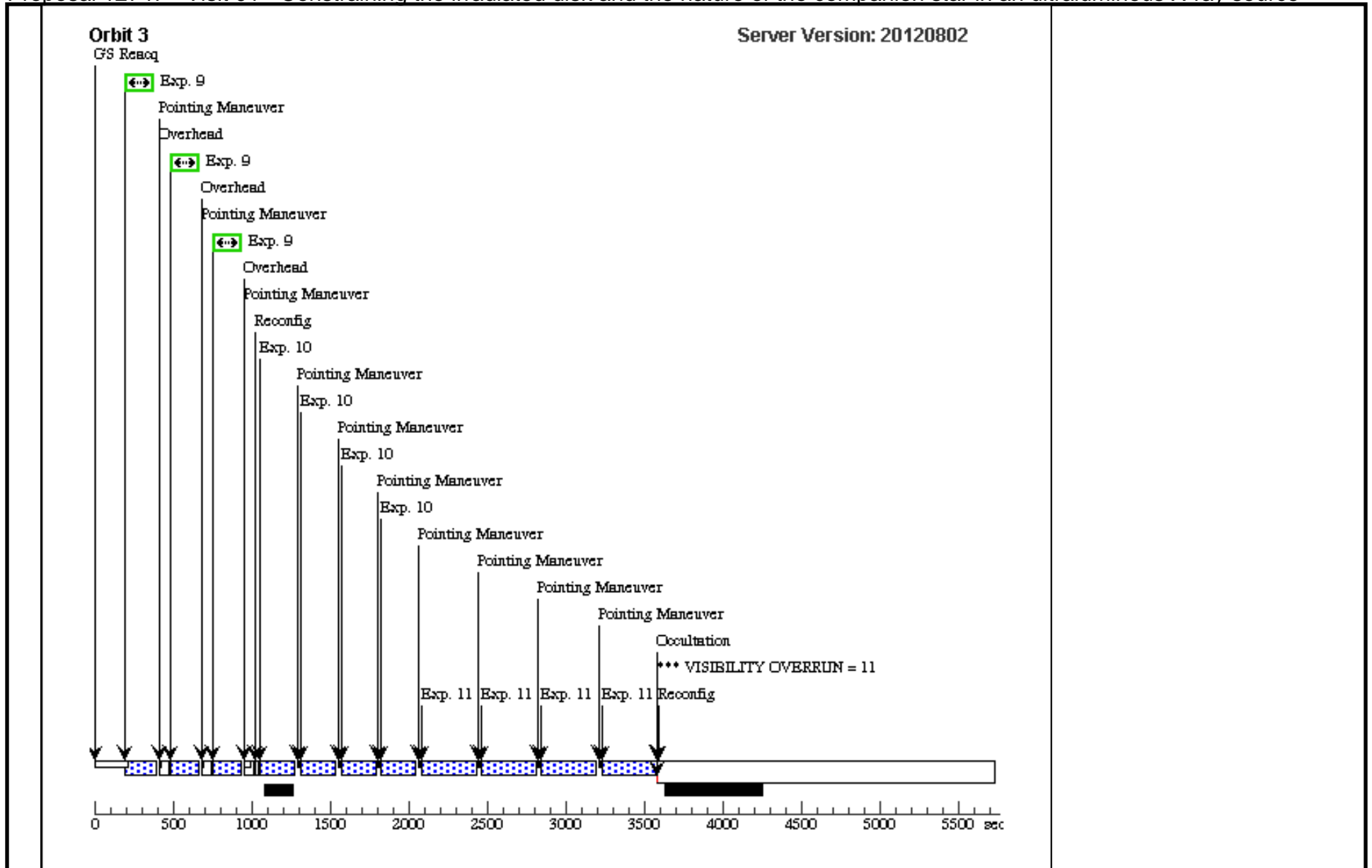
Proposal 12747 - Visit 01 - Constraining the irradiated disk and the nature of the companion star in an ultraluminous X-ray source

11	(1) HOLMBERGIX- X1	WFC3/IR, MULTIACCUM, IRSUB512	F160W	SAMP-SEQ=SPARS 25; NSAMP=15	Pattern 2, Exps 11-1 1 in Visit 01 (2)	[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[3]
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Proposal 12747 - Visit 51 - Constraining the irradiated disk and the nature of the companion star in an ultraluminous X-ray source

Fri Aug 31 01:02:57 GMT 2012

Visit	Proposal 12747, Visit 51, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR, WFC3/UVIS Special Requirements: (none) <i>Comments: This visit should be scheduled to occur during the 15,000 second duration of the corresponding Chandra observation (Chandra Seq: 401436 ObsId: 14471, see Chandra proposal 13400775).</i>					
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures	
	(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), (3), (4), (5), (6), (8), (9)	
	(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		(7), (10), (11)	
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	HOLMBERGIX-X1	RA: 09 57 53.3000 (149.4720833d) Dec: +69 03 48.10 (69.06336d) Equinox: J2000		V=22.6+/-0.1	Reference Frame: ICRS

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#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
Exposures	1	(1) HOLMBERGIX-X1	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F225W	FLASH=11.0	POS TARG +2,null; GS ACQ SCENARI O BASE1B3	Pattern 1, Exps 1-1 in Visit 51 (1)	227 Secs [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]
	2	(1) HOLMBERGIX-X1	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F336W	FLASH=12	POS TARG +2,null	Pattern 1, Exps 2-2 in Visit 51 (1)	85 Secs [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]
	3	(1) HOLMBERGIX-X1	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F438W	FLASH=11	POS TARG +2,null	Pattern 1, Exps 3-3 in Visit 51 (1)	80 Secs [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]
	4	(1) HOLMBERGIX-X1	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F547M	FLASH=10	POS TARG +2,null	Pattern 1, Exps 4-4 in Visit 51 (1)	100 Secs [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]
	5	(1) HOLMBERGIX-X1	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F763M	FLASH=9	POS TARG +2,null	Pattern 1, Exps 5-5 in Visit 51 (1)	220 Secs [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1] [2]
	6	(1) HOLMBERGIX-X1	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F845M	FLASH=8	POS TARG +2,null	Pattern 1, Exps 6-6 in Visit 51 (1)	370 Secs [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[2]
	7	(1) HOLMBERGIX-X1	WFC3/IR, MULTIACCUM, IRSUB512	F125W	SAMP-SEQ=STEP2 5; NSAMP=12	POS TARG +2,null	Pattern 2, Exps 7-7 in Visit 51 (2)	[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]	[2]
	8	(1) HOLMBERGIX-X1	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F621M	FLASH=10	POS TARG +2,null	Pattern 1, Exps 8-8 in Visit 51 (1)	130 Secs [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[2]
	9	(1) HOLMBERGIX-X1	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F689M	FLASH=9	POS TARG +2,null	Pattern 1, Exps 9-9 in Visit 51 (1)	170 Secs [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[3]
	10	(1) HOLMBERGIX-X1	WFC3/IR, MULTIACCUM, IRSUB512	F098M	SAMP-SEQ=STEP2 5; NSAMP=13	POS TARG +2,null	Pattern 2, Exps 10-10 in Visit 51 (2)	[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]	[3]

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11	(1) HOLMBERGIX- X1	WFC3/IR, MULTIACCUM, IRSUB512	F160W	SAMP-SEQ=SPARS POS TARG +2,null 25; NSAMP=15	Pattern 2, Exps 11-1 1 in Visit 51 (2)	[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[3]
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