10761 - The X-ray Spectral and Optical/IR Flux Variability in Magnetars

Cycle: 14, 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) 1E1048-5937	NIC3	2	25-Oct-2005 21:27:40.0	yes
02	(1) 1E1048-5937	NIC3	2	25-Oct-2005 21:28:26.0	yes
03	(1) 1E1048-5937	NIC3	1	25-Oct-2005 21:28:53.0	yes
04	(1) 1E1048-5937	NIC3	1	25-Oct-2005 21:29:15.0	yes

6 Total Orbits Used

ABSTRACT

In the last decade it has become clear that there exists a small subset of pulsars that are powered neither by rotation nor accretion but by the decay of their enormous magnetic fields -- magnetars. The origin of the X-ray emission from magnetar-candidate AXPs (Anomalous X-ray

Pulsars) is fairly well understood within the framework of the magnetar model. However, where and how the optical/IR emission is produced is unclear. If, as recent models suggest, the optical/IR emission is magnetospheric, then any variation in the optical/IR flux should be accompanied by variation in the X-ray spectra. We therefore propose for joint Chandra-Hubble observations of two magnetar candidates in order to test the optical/IR emission models for magnetars.

OBSERVING DESCRIPTION

We plan to observe one target 4 times with HST/NICMOS simultaneously with Chandra, using the nic 3 camera and the f160w and f110w filters.
On visits 1 and 2, we use the nic spiral dither pattern with 30 points, spaced 5 arcseconds apart. In filter f160w, exposures will be made in multiaccum mode with for an integration time of 39.9 seconds per pointing, or 1197 seconds total. The 30-point pattern and 2 sets of exposures fill 2 orbit per visit; thus, visits 1 and 2 will require a total of 4 orbits.
On visits 3 and 4, we use a similar nic spiral dither pattern, but with 26 points spaced 5 arcseconds apart. Only filter f160w is used, with the same multiaccum settings as above for a total integration time of 1037 seconds. Visits 3 and 4 are each one complete orbit.

REAL TIME JUSTIFICATION

Our scientific goal is to monitor IR flux changes in our target, and search for correlations with X-ray spectral variability. In order to identify variability that is truly correlated, we require that our HST and Chandra observations be simultaneous, or at least overlapping in time. Ideally, the visits would be separated by approximately greater than 2 months and equispaced.

Visit

Proposal 10761, Visit 01 Wed Oct 26 01:29:19 GMT 2005

Diagnostic Status: No Diagnostics

Scientific Instruments: NIC3

Special Requirements: (none)

Comments: This visit must be scheduled simultaneously with Chandra.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG		(1-2)
	Purpose=DITHER	Pattern Orientation=0		
	Number Of Points=30	Angle Between Sides=		
	Point Spacing=5	Center Pattern=false		
	Line Spacing=			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	1E1048-5937	RA: 10 50 7.1300 (162.5297083d) Dec: -59 53 21.30 (-59.88925d) Equinox: J2000 Plate Id: (?)		V=(?) H~22 mag, J=23.4 mag	Coordinate Source: IR observation (Wang & Chakrabarty 2002, ApJ, 579, L33)

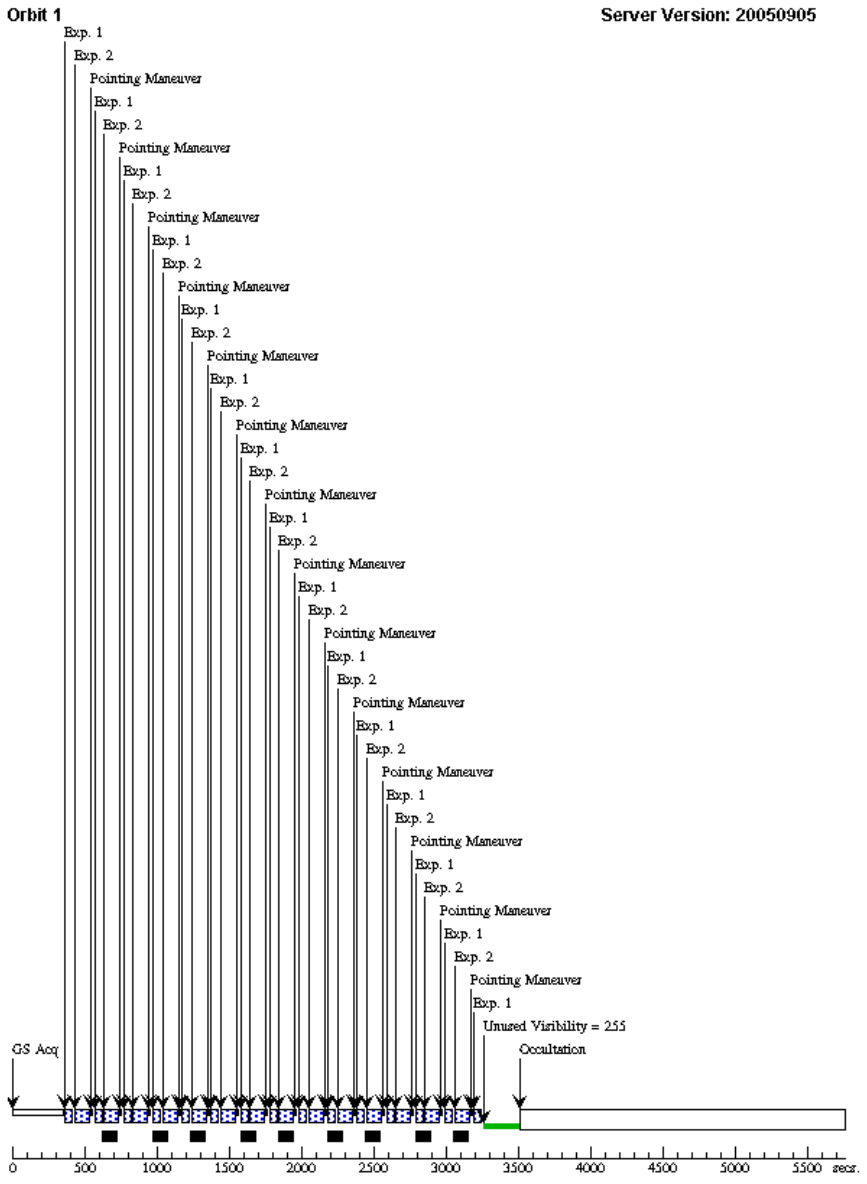
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	1	(1) 1E1048-5937	NIC3, MULTIACCUM, NIC3	F160W	NSAMP=23; SAMP-SEQ=STEP2 ; OFFSET=SAM		Pattern 1-2 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]* *[==>(Pattern 5)]* *[==>(Pattern 6)]* *[==>(Pattern 7)]* *[==>(Pattern 8)]* *[==>(Pattern 9)]* *[==>(Pattern 10)]* *[==>(Pattern 11)]* *[==>(Pattern 12)]* *[==>(Pattern 13)]* *[==>(Pattern 14)]* *[==>(Pattern 15)]*	***[1]***
								[==>(Pattern 16)] *[==>(Pattern 17)]* *[==>(Pattern 18)]* *[==>(Pattern 19)]* *[==>(Pattern 20)]* *[==>(Pattern 21)]* *[==>(Pattern 22)]* *[==>(Pattern 23)]* *[==>(Pattern 24)]* *[==>(Pattern 25)]* *[==>(Pattern 26)]* *[==>(Pattern 27)]* *[==>(Pattern 28)]* *[==>(Pattern 29)]* *[==>(Pattern 30)]*	***[2]***

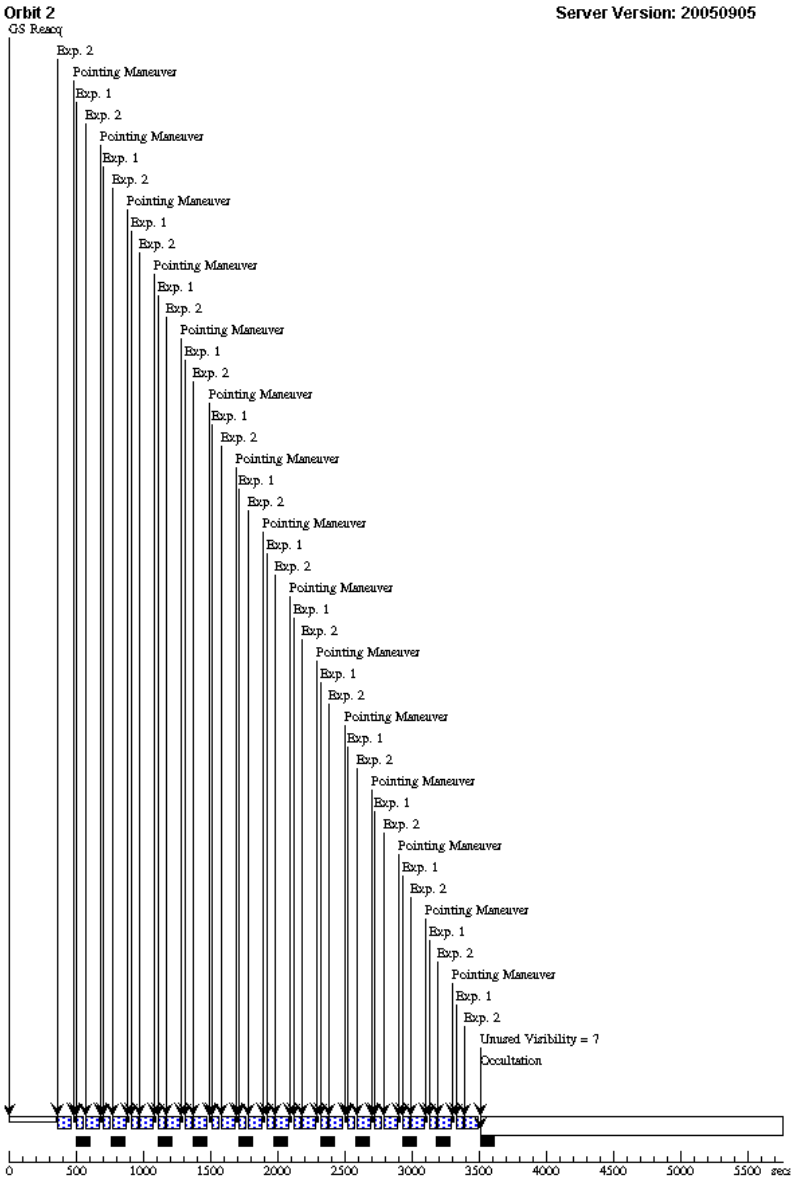
Exposures (continued)

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
2	2	(1) 1E1048-5937	NIC3, MULTIACCUM, NIC3	F110W	SAMP-SEQ=STEP8 ; NSAMP=16; OFFSET=SAM		Pattern 1-2 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]* *[==>(Pattern 5)]* *[==>(Pattern 6)]* *[==>(Pattern 7)]* *[==>(Pattern 8)]* *[==>(Pattern 9)]* *[==>(Pattern 10)]* *[==>(Pattern 11)]* *[==>(Pattern 12)]* *[==>(Pattern 13)]* *[==>(Pattern 14)]*	***[1]***
								[==>(Pattern 15)] *[==>(Pattern 16)]* *[==>(Pattern 17)]* *[==>(Pattern 18)]* *[==>(Pattern 19)]* *[==>(Pattern 20)]* *[==>(Pattern 21)]* *[==>(Pattern 22)]* *[==>(Pattern 23)]* *[==>(Pattern 24)]* *[==>(Pattern 25)]* *[==>(Pattern 26)]* *[==>(Pattern 27)]* *[==>(Pattern 28)]* *[==>(Pattern 29)]* *[==>(Pattern 30)]*	***[2]***

Orbit Structure



Orbit Structure (continued)



Visit

Proposal 10761, Visit 02 Wed Oct 26 01:29:22 GMT 2005

Diagnostic Status: No Diagnostics

Scientific Instruments: NIC3

Special Requirements: (none)

Comments: This visit must be scheduled simultaneously with Chandra.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG		(1-2)
	Purpose=DITHER	Pattern Orientation=0		
	Number Of Points=30	Angle Between Sides=		
	Point Spacing=5	Center Pattern=false		
	Line Spacing=			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	1E1048-5937	RA: 10 50 7.1300 (162.5297083d) Dec: -59 53 21.30 (-59.88925d) Equinox: J2000 Plate Id: (?)		V=(?) H~22 mag, J=23.4 mag	Coordinate Source: IR observation (Wang & Chakrabarty 2002, ApJ, 579, L33)

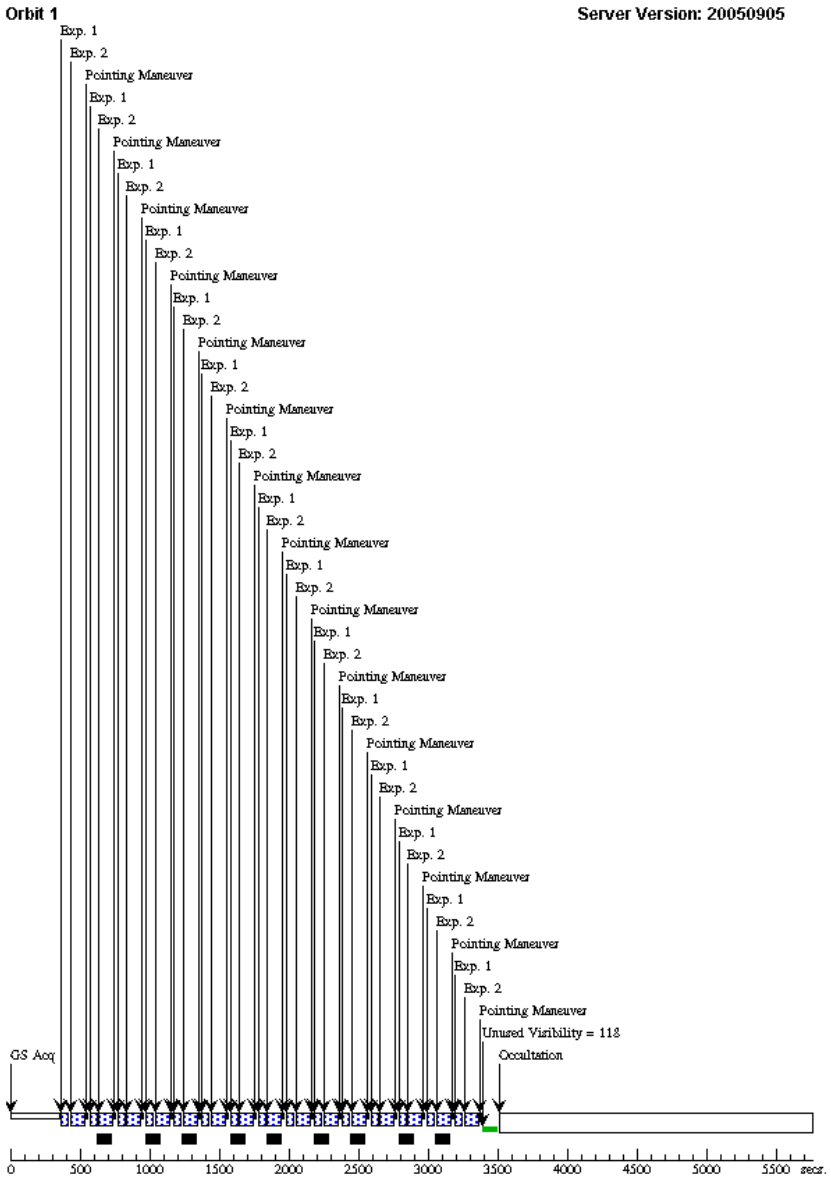
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	1	(1) 1E1048-5937	NIC3, MULTIACCUM, NIC3	F160W	NSAMP=23; SAMP-SEQ=STEP2 ; OFFSET=SAM		Pattern 1-2 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]* *[==>(Pattern 5)]* *[==>(Pattern 6)]* *[==>(Pattern 7)]* *[==>(Pattern 8)]* *[==>(Pattern 9)]* *[==>(Pattern 10)]* *[==>(Pattern 11)]* *[==>(Pattern 12)]* *[==>(Pattern 13)]* *[==>(Pattern 14)]* *[==>(Pattern 15)]*	***[1]***
								[==>(Pattern 16)] *[==>(Pattern 17)]* *[==>(Pattern 18)]* *[==>(Pattern 19)]* *[==>(Pattern 20)]* *[==>(Pattern 21)]* *[==>(Pattern 22)]* *[==>(Pattern 23)]* *[==>(Pattern 24)]* *[==>(Pattern 25)]* *[==>(Pattern 26)]* *[==>(Pattern 27)]* *[==>(Pattern 28)]* *[==>(Pattern 29)]* *[==>(Pattern 30)]*	***[2]***

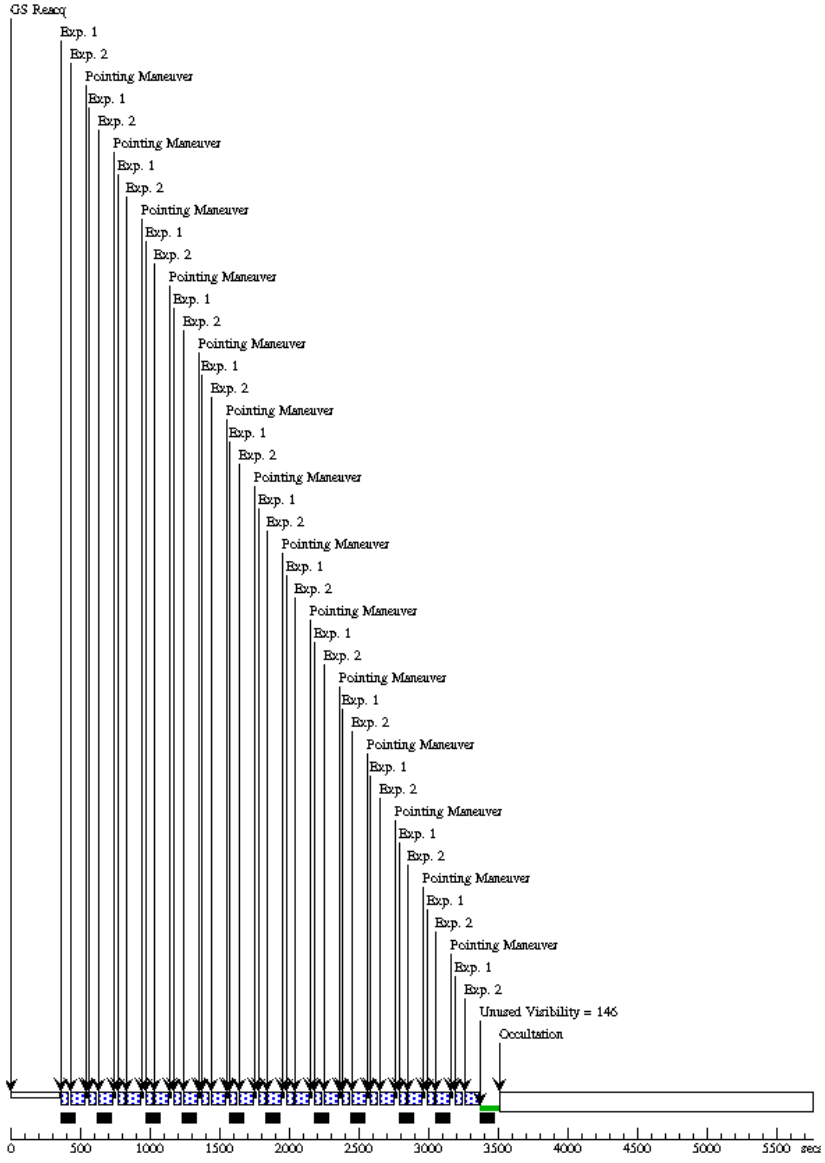
Exposures (continued)

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
2	2	(1) 1E1048-5937	NIC3, MULTIACCUM, NIC3	F110W	SAMP-SEQ=STEP8 ; NSAMP=16; OFFSET=SAM		Pattern 1-2 (1)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]* *[==>(Pattern 5)]* *[==>(Pattern 6)]* *[==>(Pattern 7)]* *[==>(Pattern 8)]* *[==>(Pattern 9)]* *[==>(Pattern 10)]* *[==>(Pattern 11)]* *[==>(Pattern 12)]* *[==>(Pattern 13)]* *[==>(Pattern 14)]* *[==>(Pattern 15)]*	***[1]***
								[==>(Pattern 16)] *[==>(Pattern 17)]* *[==>(Pattern 18)]* *[==>(Pattern 19)]* *[==>(Pattern 20)]* *[==>(Pattern 21)]* *[==>(Pattern 22)]* *[==>(Pattern 23)]* *[==>(Pattern 24)]* *[==>(Pattern 25)]* *[==>(Pattern 26)]* *[==>(Pattern 27)]* *[==>(Pattern 28)]* *[==>(Pattern 29)]* *[==>(Pattern 30)]*	***[2]***

Orbit Structure



Orbit Structure (continued)



Visit

Proposal 10761, Visit 03 Wed Oct 26 01:29:24 GMT 2005

Diagnostic Status: No Diagnostics

Scientific Instruments: NIC3

Special Requirements: (none)

Comments: This visit must be scheduled simultaneously with Chandra.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=0		
	Number Of Points=26	Angle Between Sides=		
	Point Spacing=5	Center Pattern=false		
	Line Spacing=			

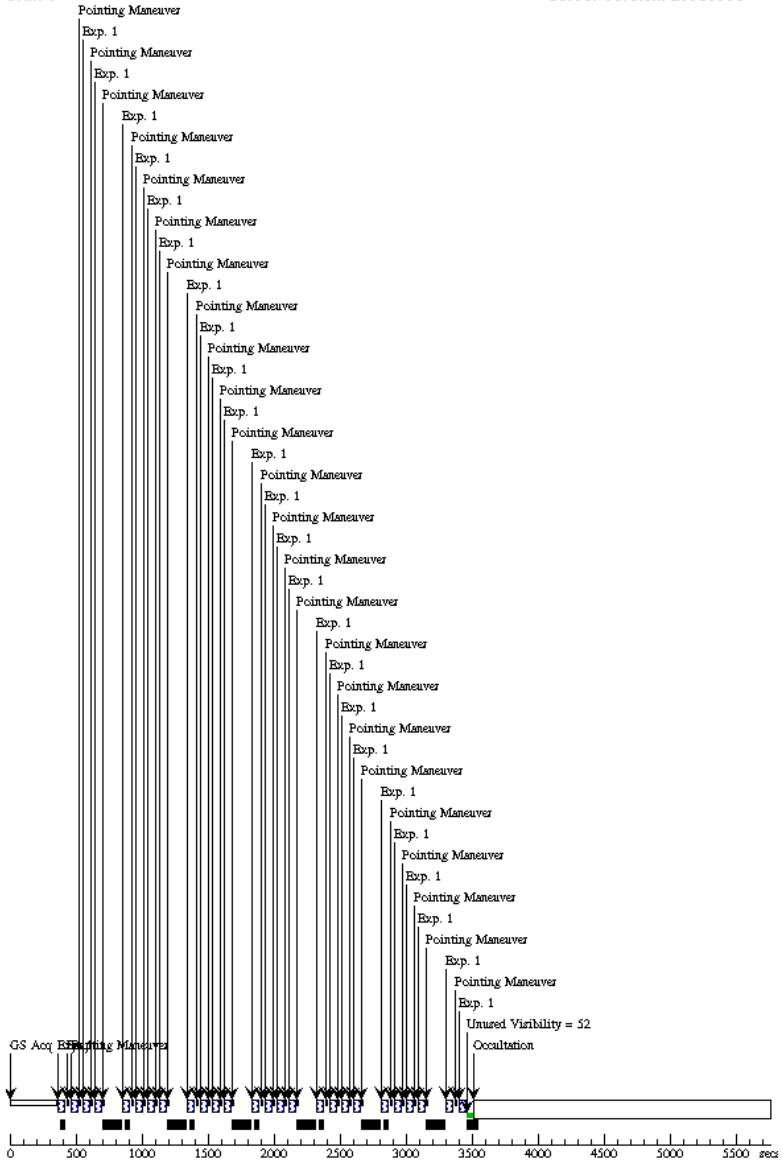
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	1E1048-5937	RA: 10 50 7.1300 (162.5297083d) Dec: -59 53 21.30 (-59.88925d) Equinox: J2000 Plate Id: (?)		V=(?) H~22 mag, J=23.4 mag	Coordinate Source: IR observation (Wang & Chakrabarty 2002, ApJ, 579, L33)

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	1	(1) 1E1048-5937	NIC3, MULTIACCUM, NIC3	F160W	NSAMP=23; SAMP-SEQ=STEP2 ; OFFSET=SAM		Pattern 1-1 (2)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]* *[==>(Pattern 5)]* *[==>(Pattern 6)]* *[==>(Pattern 7)]* *[==>(Pattern 8)]* *[==>(Pattern 9)]* *[==>(Pattern 10)]* *[==>(Pattern 11)]* *[==>(Pattern 12)]* *[==>(Pattern 13)]* *[==>(Pattern 14)]* *[==>(Pattern 15)]* *[==>(Pattern 16)]* *[==>(Pattern 17)]* *[==>(Pattern 18)]* *[==>(Pattern 19)]* *[==>(Pattern 20)]* *[==>(Pattern 21)]* *[==>(Pattern 22)]* *[==>(Pattern 23)]* *[==>(Pattern 24)]* *[==>(Pattern 25)]* *[==>(Pattern 26)]*	***[1]***

Orbit Structure



Visit

Proposal 10761, Visit 04 Wed Oct 26 01:29:25 GMT 2005

Diagnostic Status: No Diagnostics

Scientific Instruments: NIC3

Special Requirements: (none)

Comments: This visit must be scheduled simultaneously with Chandra.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=NIC-SPIRAL-DITH	Coordinate Frame=POS-TARG		(1)
	Purpose=DITHER	Pattern Orientation=0		
	Number Of Points=26	Angle Between Sides=		
	Point Spacing=5	Center Pattern=false		
	Line Spacing=			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	1E1048-5937	RA: 10 50 7.1300 (162.5297083d) Dec: -59 53 21.30 (-59.88925d) Equinox: J2000 Plate Id: (?)		V=(?) H~22 mag, J=23.4 mag	Coordinate Source: IR observation (Wang & Chakrabarty 2002, ApJ, 579, L33)

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	1	(1) 1E1048-5937	NIC3, MULTIACCUM, NIC3	F160W	NSAMP=23; SAMP-SEQ=STEP2 ; OFFSET=SAM		Pattern 1-1 (2)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]* *[==>(Pattern 5)]* *[==>(Pattern 6)]* *[==>(Pattern 7)]* *[==>(Pattern 8)]* *[==>(Pattern 9)]* *[==>(Pattern 10)]* *[==>(Pattern 11)]* *[==>(Pattern 12)]* *[==>(Pattern 13)]* *[==>(Pattern 14)]* *[==>(Pattern 15)]* *[==>(Pattern 16)]* *[==>(Pattern 17)]* *[==>(Pattern 18)]* *[==>(Pattern 19)]* *[==>(Pattern 20)]* *[==>(Pattern 21)]* *[==>(Pattern 22)]* *[==>(Pattern 23)]* *[==>(Pattern 24)]* *[==>(Pattern 25)]* *[==>(Pattern 26)]*	***[1]***

Orbit Structure