



14814 - Searching the IR counterpart of the mysterious central object in RCW 103

Cycle: 23, Proposal Category: GO/DD

(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) 2E-1613.5-5053	WFC3/IR	1	29-Jul-2016 15:55:25.0	yes
02	(1) 2E-1613.5-5053	WFC3/IR	1	29-Jul-2016 15:55:27.0	yes

2 Total Orbits Used

ABSTRACT

2E 1613.5-5053, a likely neutron star, is a X-ray bright source at the center of a young 2-kyr supernova remnant RCW 103. Despite 30 years of study, its true nature is a mystery. It shows behavior reminiscent of magnetars yet has a periodicity of 6.67 hrs -- too slow to be a rotational period, but also very unlikely to be a binary orbital period. On 2016 June 22, it emitted a bright 8-ms, magnetar-like burst detected by Swift-BAT and is now 15 times brighter in 0.5-10 keV X-ray luminosity compared to quiescence. We request rapid deep F110W and F160W imaging of this target to find a fading counterpart, or put strong limits on its presence. We request the first observation to be conducted within a week, with the next scheduled after about a month. Either result will be distinctive for the proposed theoretical models -- a magnetar in a very low mass X-ray binary (LMXB), a

magnetar with a fall-back disk or a pre-LMXB.

OBSERVING DESCRIPTION

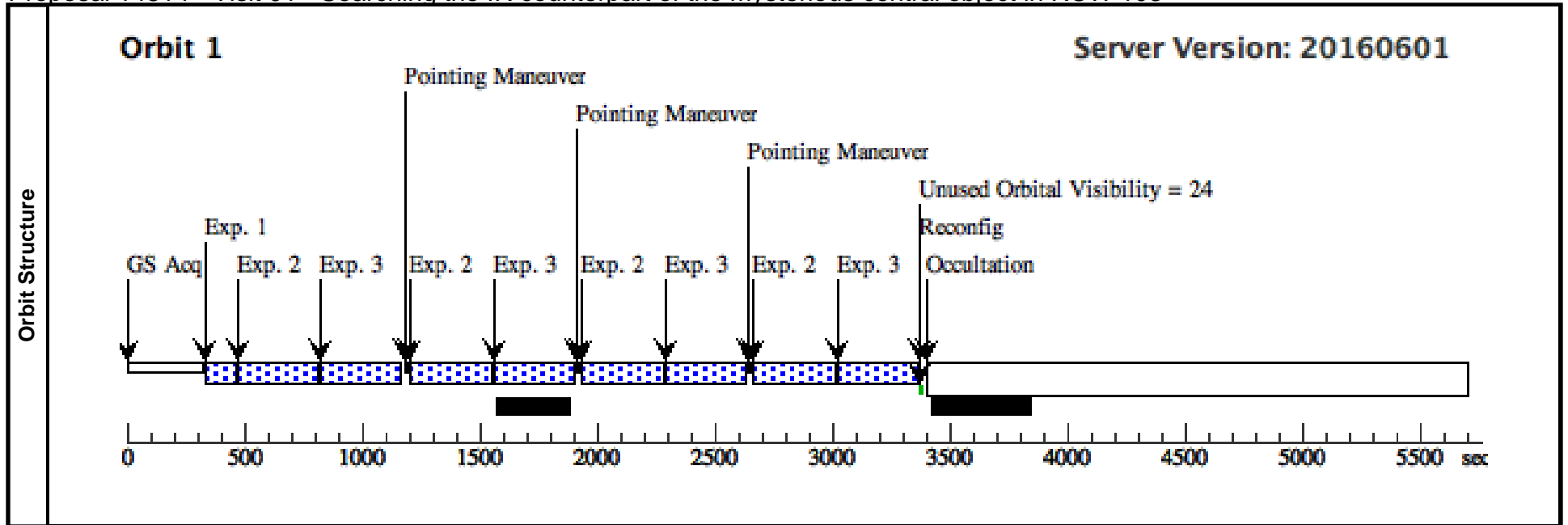
We'll observe 2E 1613.5-5053 with WFC3 in F110W and F160W, once within a week (Visit 1) and once after a month or two (Visit 2). In each visit, each filter, we'll use the standard 4 position dither pattern.

The aim is to observe a possibly brightened and fading IR counterpart of a weird neutron star that had a magnetar-like outburst last week. There are 7 stars in the 0.7" radius Chandra error circle.

Proposal 14814 - Visit 01 - Searching the IR counterpart of the mysterious central object in RCW 103

Fri Jul 29 19:55:28 GMT 2016

Visit	Proposal 14814, Visit 01, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: BEFORE 06-JUL-2016:00:00:00									
Patterns	#	Primary Pattern		Secondary Pattern		Exposures				
(1)	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			(2-3)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
(1)	2E-1613.5-5053	RA: 16 17 36.2300 (244.4009583d) Dec: -51 02 24.60 (-51.04017d) Equinox: J2000		V=25 Target does not yet have a confirmed optical/IR counterpart.	Reference Frame: SIMBAD					
<i>Comments: This object was generated by the target selector and retrieved from the SIMBAD database. Extended=NO</i>										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F160W Short	(1) 2E-1613.5-5053	WFC3/IR, MULTIACCUM, IRSUB512	F160W	NSAMP=9; SAMP-SEQ=STEP25				105.518395 Secs (105.518 Secs) [==>]	[1]
2	F110W	(1) 2E-1613.5-5053	WFC3/IR, MULTIACCUM, IRSUB512	F110W	NSAMP=15; SAMP-SEQ=SPARS25			Pattern 1, Exps 2-3 in Visit 01 (1)	321.750541 Secs (1287.002 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]
3	F160W	(1) 2E-1613.5-5053	WFC3/IR, MULTIACCUM, IRSUB512	F160W	NSAMP=15; SAMP-SEQ=SPARS25			Pattern 1, Exps 2-3 in Visit 01 (1)	321.750541 Secs (1287.002 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]



Proposal 14814 - Visit 02 - Searching the IR counterpart of the mysterious central object in RCW 103

Fri Jul 29 19:55:28 GMT 2016

Visit	Proposal 14814, Visit 02, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: SAME ORIENT AS 01; BETWEEN 06-AUG-2016:00:00:00 AND 06-OCT-2016:00:00:00									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
		(1)	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		(2-3)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	2E-1613.5-5053	RA: 16 17 36.2300 (244.4009583d) Dec: -51 02 24.60 (-51.04017d) Equinox: J2000		V=25 Target does not yet have a confirmed optical/IR counterpart.	Reference Frame: SIMBAD				
<i>Comments: This object was generated by the target selector and retrieved from the SIMBAD database.</i> Extended=NO										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F160W Short	(1) 2E-1613.5-5053	WFC3/IR, MULTIACCUM, IRSUB512	F160W	NSAMP=9; SAMP-SEQ=STEP25			105.518395 Secs (105.518 Secs)	
									[==>]	[1]
	2	F110W	(1) 2E-1613.5-5053	WFC3/IR, MULTIACCUM, IRSUB512	F110W	NSAMP=15; SAMP-SEQ=SPARS25		Pattern 1, Exps 2-3 in Visit 02 (1)	321.750541 Secs (1287.002 Secs)	
								[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]	
3	F160W	(1) 2E-1613.5-5053	WFC3/IR, MULTIACCUM, IRSUB512	F160W	NSAMP=15; SAMP-SEQ=SPARS25		Pattern 1, Exps 2-3 in Visit 02 (1)	321.750541 Secs (1287.002 Secs)		
								[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]	

