



13109 - Joint Chandra and HST Monitoring and Studies of the Crab Nebula

Cycle: 20, 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) CRAB-NEBULA	ACS/WFC	1	16-Oct-2012 21:39:59.0	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>
02	(1) CRAB-NEBULA	ACS/WFC	1	16-Oct-2012 21:40:06.0	yes
03	(1) CRAB-NEBULA	ACS/WFC	1	16-Oct-2012 21:40:12.0	yes
04	(1) CRAB-NEBULA	ACS/WFC	1	16-Oct-2012 21:40:17.0	yes
05	(1) CRAB-NEBULA	ACS/WFC	1	16-Oct-2012 21:40:22.0	yes

5 Total Orbits Used

ABSTRACT

In 2010 Sep the Crab surprised the astrophysical community with a powerful gamma-ray flare, detected by the Agile and Fermi satellites. In 2011 it also became apparent that the nebula has been exhibiting up to 7% variability in hard X-rays for over a decade. The scientific purpose of this proposal is to: 1) To (continue to) identify, quantify, and correlate the spatial and spectral variations in X-rays and the optical over time 2) Establish both an X-ray and optical baseline of the system prior to any future gamma-ray flare as an aid for establishing the location of the flare.

OBSERVING DESCRIPTION

The program is part of a multiwavelength (X-ray and optical) monitoring campaign of the Crab pulsar and inner Nebula. It consists in a series of 5 ACS imaging observations in the F550M filter, to be performed quasi-simultaneously (within 10 days maximum) with Chandra/ACIS imaging observations. We ask to observe the target in January, February, April, August, October 2013. For each epoch, we have selected a time window (spanning 10 days) in which the target is visible. The HST visits (as well as the Chandra ones) should be scheduled within such windows. The same instrumental setup will be adopted for each visit. To fully cover the FOV of our Chandra observations (150"x150"), we will use the ACS/WFC with the WFC aperture. A box dithering pattern will be implemented to fill the inter-chip gap as well as to reject cosmic ray hits. Setting an exposure of 500 s for each position of the dithering pattern results in 2000 s exposure time per visit, which is well suited to achieve our goals and allows for an optimal use of the orbital visibility window.

Proposal 13109 - Visit 01 - Joint Chandra and HST Monitoring and Studies of the Crab Nebula

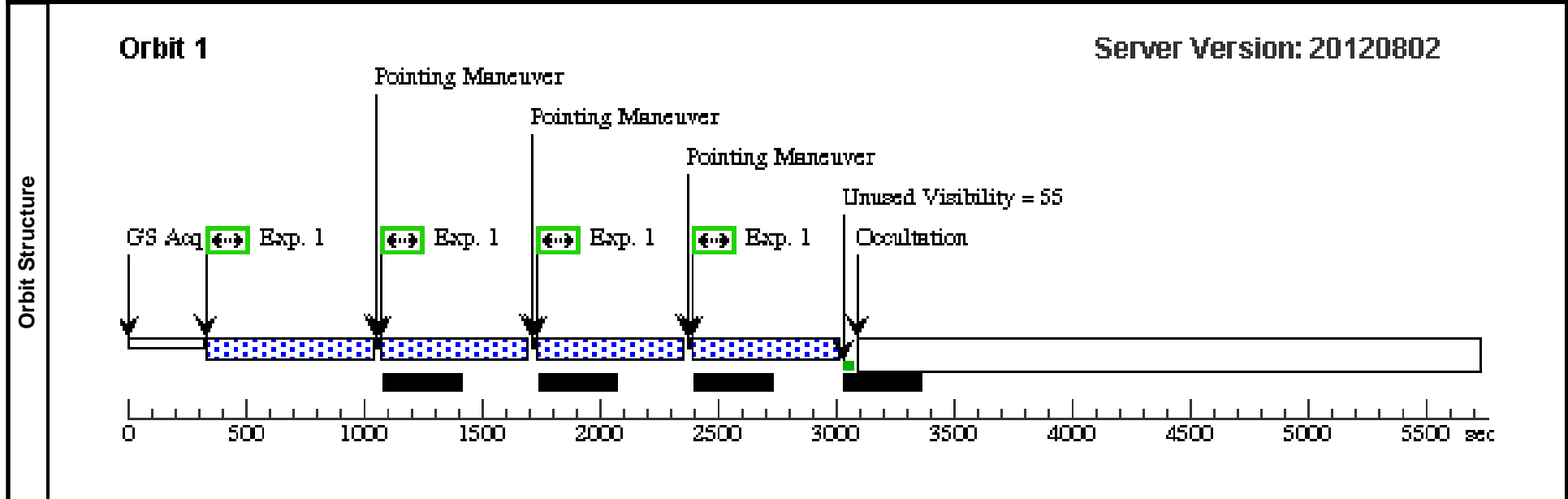
Wed Oct 17 01:40:29 GMT 2012

Visit	Proposal 13109, Visit 01 Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC Special Requirements: SCHED 80%: BETWEEN 07-JAN-2013:00:00:00 AND 17-JAN-2013:00:00:00		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=3.5 Line Spacing=0.5	Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides=85.28 Center Pattern=false	(1)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	CRAB-NEBULA	RA: 05 34 31.9400 (83.6330833d) Dec: +22 00 52.18 (22.01449d) Equinox: J2000		V=16.5	Reference Frame: SIMBAD
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>					

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(1) CRAB-NEBULA	ACS/WFC, ACCUM, WFC	F550M			Pattern 1, Exps 1-1 i n Visit 01 (1)	500 Secs	
									[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]



Proposal 13109 - Visit 02 - Joint Chandra and HST Monitoring and Studies of the Crab Nebula

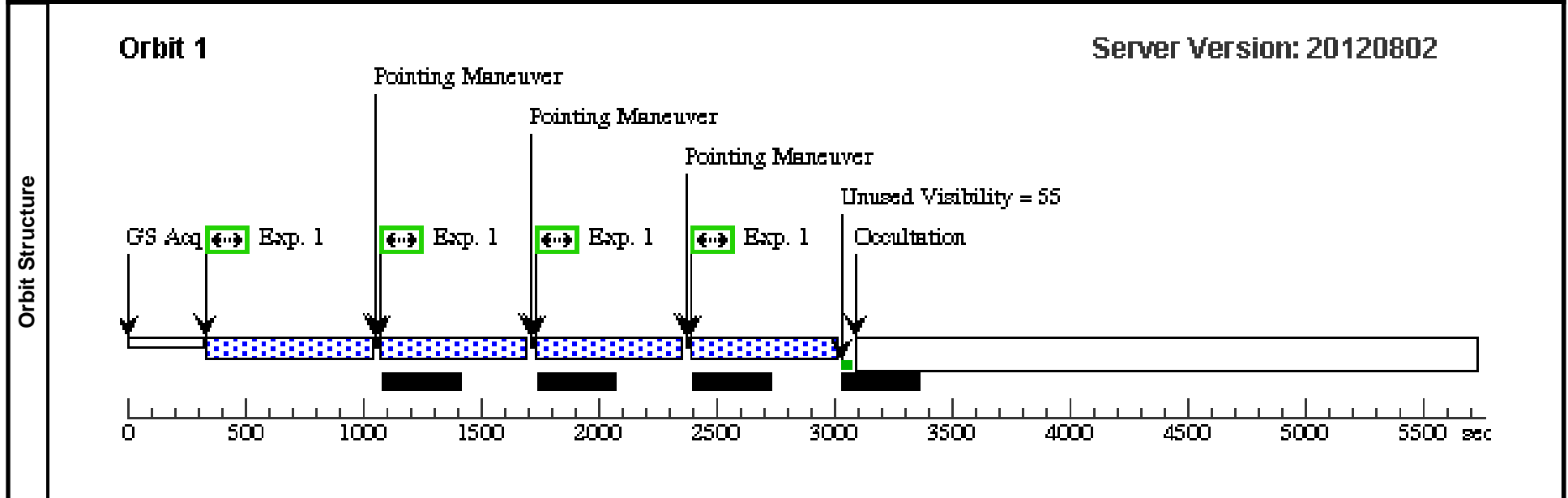
Wed Oct 17 01:40:30 GMT 2012

Visit	Proposal 13109, Visit 02		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: ACS/WFC		
	Special Requirements: SCHED 80%: BETWEEN 23-FEB-2013:00:00:00 AND 05-MAR-2013:00:00:00		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=3.5 Line Spacing=0.5	Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides=85.28 Center Pattern=false	(1)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	CRAB-NEBULA	RA: 05 34 31.9400 (83.6330833d) Dec: +22 00 52.18 (22.01449d) Equinox: J2000		V=16.5	Reference Frame: SIMBAD
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>					

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(1) CRAB-NEBULA	ACS/WFC, ACCUM, WFC	F550M			Pattern 1, Exps 1-1 i n Visit 02 (1)	500 Secs	
									[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]	[1]



Proposal 13109 - Visit 03 - Joint Chandra and HST Monitoring and Studies of the Crab Nebula

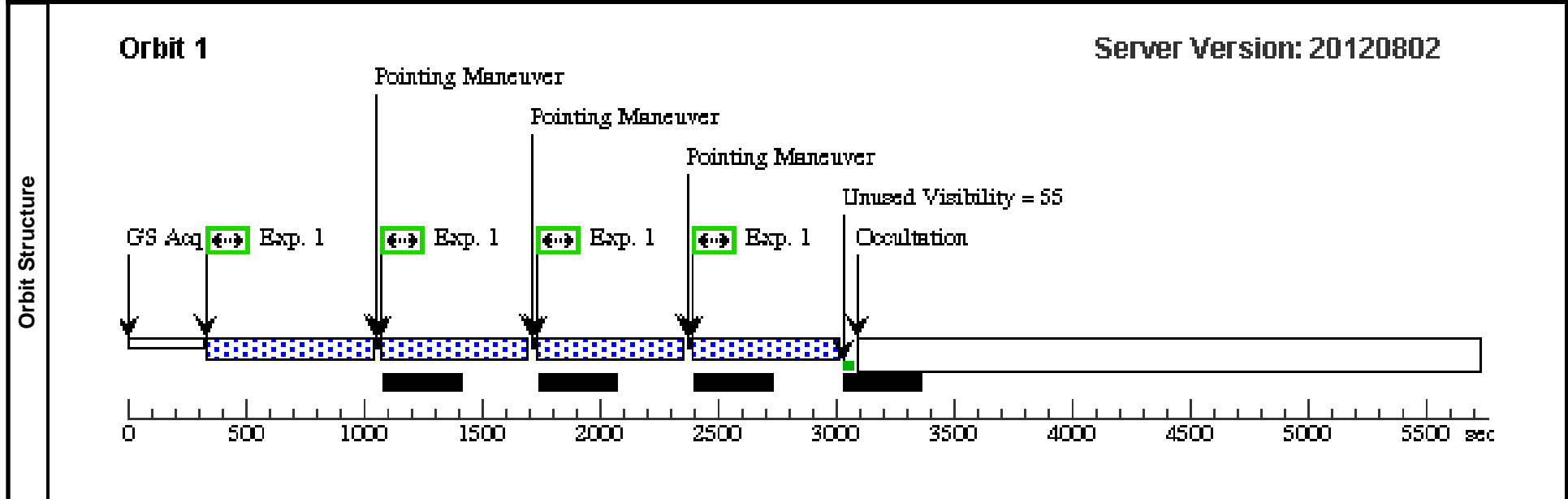
Wed Oct 17 01:40:31 GMT 2012

Visit	Proposal 13109, Visit 03		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: ACS/WFC		
	Special Requirements: SCHED 80%: BETWEEN 13-APR-2013:00:00:00 AND 23-APR-2013:00:00:00		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=3.5 Line Spacing=0.5	Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides=85.28 Center Pattern=false	(1)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	CRAB-NEBULA	RA: 05 34 31.9400 (83.6330833d) Dec: +22 00 52.18 (22.01449d) Equinox: J2000		V=16.5	Reference Frame: SIMBAD
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>					

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(1) CRAB-NEBULA	ACS/WFC, ACCUM, WFC	F550M			Pattern 1, Exps 1-1 i n Visit 03 (1)	500 Secs	
									[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]	[1]

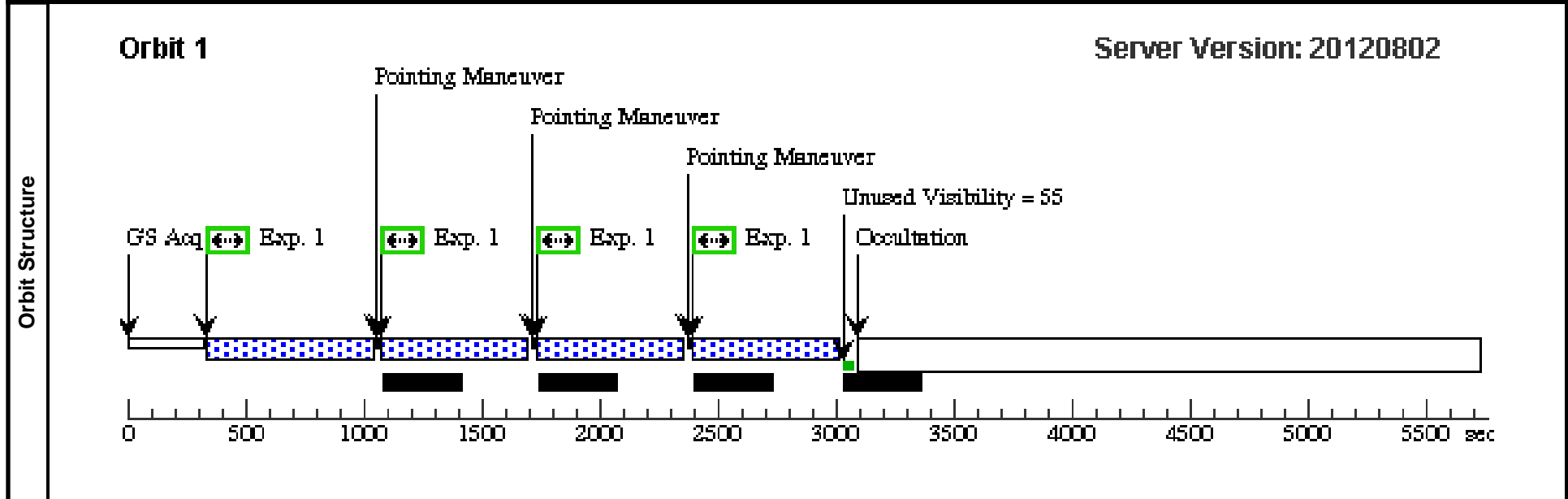


Visit	Proposal 13109, Visit 04 Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC Special Requirements: SCHED 80%: BETWEEN 12-AUG-2013:00:00:00 AND 22-AUG-2013:00:00:00		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=3.5 Line Spacing=0.5	Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides=85.28 Center Pattern=false	(1)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	CRAB-NEBULA	RA: 05 34 31.9400 (83.6330833d) Dec: +22 00 52.18 (22.01449d) Equinox: J2000		V=16.5	Reference Frame: SIMBAD
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>					

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(1) CRAB-NEBULA	ACS/WFC, ACCUM, WFC	F550M			Pattern 1, Exps 1-1 i n Visit 04 (1)	500 Secs	
									[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]



Proposal 13109 - Visit 05 - Joint Chandra and HST Monitoring and Studies of the Crab Nebula

Wed Oct 17 01:40:33 GMT 2012

Visit	Proposal 13109, Visit 05 Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC Special Requirements: SCHED 80%: BETWEEN 01-OCT-2013:00:00:00 AND 11-OCT-2013:00:00:00		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=3.5 Line Spacing=0.5	Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides=85.28 Center Pattern=false	(1)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	CRAB-NEBULA	RA: 05 34 31.9400 (83.6330833d) Dec: +22 00 52.18 (22.01449d) Equinox: J2000		V=16.5	Reference Frame: SIMBAD
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>					

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(1) CRAB-NEBULA	ACS/WFC, ACCUM, WFC	F550M			Pattern 1, Exps 1-1 i n Visit 05 (1)	500 Secs	
									[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]

