



12999 - Are the Progenitors of SN 2002cx-like Objects Massive Stars or White Dwarfs?

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) SN-2008GE	ACS/WFC	2	11-Jul-2012 23:17:48.0	yes
02	(2) SN-2008HA	ACS/WFC	2	11-Jul-2012 23:18:01.0	yes
03	(3) SN-2010AE	ACS/WFC	2	11-Jul-2012 23:18:12.0	yes
04	(4) SN-2010EL	ACS/WFC	2	11-Jul-2012 23:18:23.0	yes

8 Total Orbits Used

ABSTRACT

The largest class of "peculiar" supernovae (SN) is the SN 2002cx-like class. The SN are observationally similar to Type Ia SN, but with several differences that separate them into their own class. The recently discovered SN 2008ha, which is a member of the class, was extremely faint ($M_V =$

-14.2 mag) and ejected only 0.3 M_{sun} of material. Despite its similarities to SN Ia, clearly it did not fully disrupt a Chandrasekhar-mass white dwarf. This discovery provoked some to question if it was the result of a massive star whose core collapsed to a black hole shortly after creation of a proto-neutron star, allowing only a small amount of ejecta to escape and creating a weak electromagnetic signature. We propose to observe the SN sites of four very nearby ($D < 20$ Mpc) members of this class, allowing us to resolve stars in the vicinity of the SN, and place estimates and/or limits on the mass of the progenitor star. If these SN come from massive stars, we should detect other massive stars in their neighborhood. Constraining the progenitors of these objects has far-reaching implications for stellar evolution, SN physics, metal enrichment, and black hole creation rates. This simple experiment should determine if the progenitors were massive stars or white dwarfs.

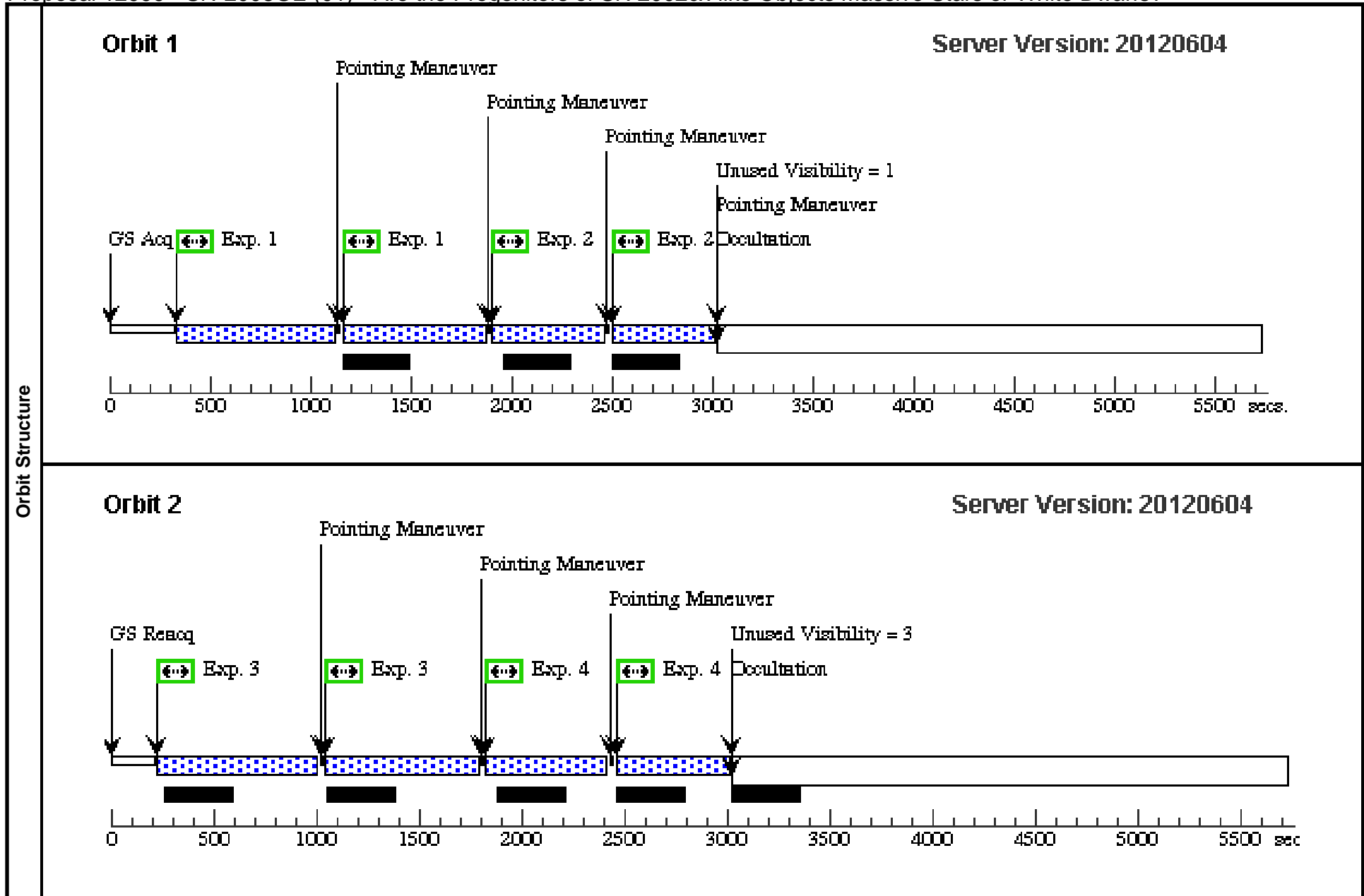
OBSERVING DESCRIPTION

We plan to get ACS images of the host galaxies and immediate progenitor environments of 4 supernovae. We want BVRI photometry to properly characterize the stellar populations and dust content of the galaxies. We hope to split the time 30,20,20,30% between BVRI. There are two orbit blocks for each target. For two targets (larger galaxies), we specified orientations that will maximize the galaxy on the instrument.

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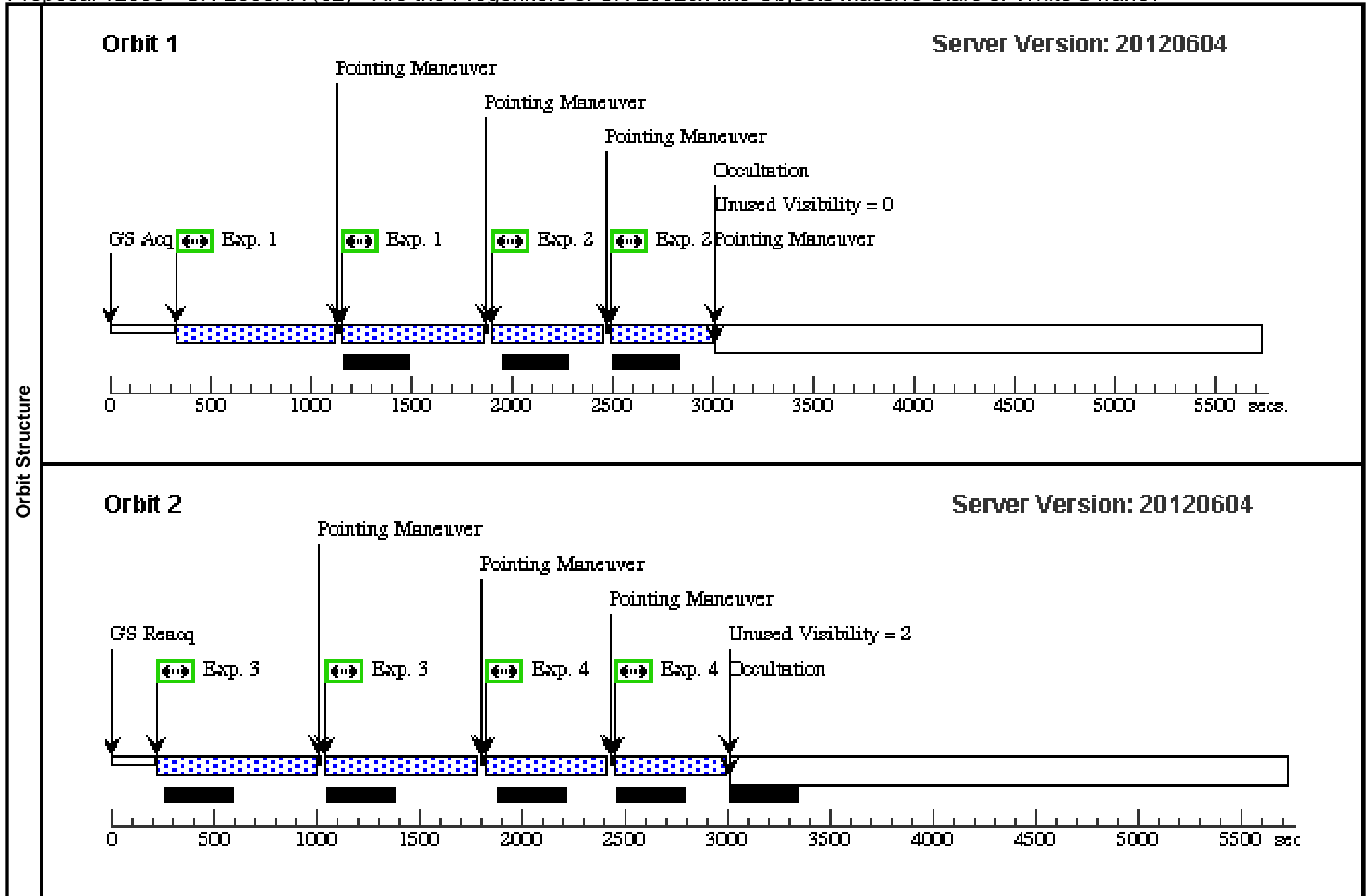
Visit	Proposal 12999, SN-2008GE (01), implementation Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC Special Requirements: SCHED 100%; ORIENT 120D TO 190 D; ORIENT 320D TO 10 D <i>Comments: Orientations were chosen to get most of the galaxy. They can be expanded, but the science will be impacted somewhat. The more of the galaxy, the better. The best angles are near 145 and 335.</i>									
Patterns	#	Primary Pattern	Secondary Pattern	Exposures						
	(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=3.011 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides= Center Pattern=false		(1), (2), (3), (4)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	SN-2008GE	RA: 04 08 24.6800 (62.1028333d) Dec: -47 53 47.40 (-47.89650d) Equinox: J2000		V=25	Reference Frame: ICRS <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) SN-2008GE	(1) SN-2008GE	ACS/WFC, ACCUM, WFC1	F435W			Pattern 1, Exps 1-1 in SN-2008GE (01) (1)	600 Secs [=>584.0 Secs (Pattern 1)] [=>584.0 Secs (Pattern 2)]	[1]
	2	(1) SN-2008GE	(1) SN-2008GE	ACS/WFC, ACCUM, WFC1	F555W			Pattern 1, Exps 2-2 in SN-2008GE (01) (1)	400 Secs [=>384.0 Secs (Pattern 1)] [=>384.0 Secs (Pattern 2)]	[1]
	3	(1) SN-2008GE	(1) SN-2008GE	ACS/WFC, ACCUM, WFC1	F814W			Pattern 1, Exps 3-3 in SN-2008GE (01) (1)	600 Secs [=>622.0 Secs (Pattern 1)] [=>622.0 Secs (Pattern 2)]	[2]
	4	(1) SN-2008GE	(1) SN-2008GE	ACS/WFC, ACCUM, WFC1	F625W			Pattern 1, Exps 4-4 in SN-2008GE (01) (1)	400 Secs [=>422.0 Secs (Pattern 1)] [=>422.0 Secs (Pattern 2)]	[2]



Proposal 12999 - SN-2008HA (02) - Are the Progenitors of SN 2002cx-like Objects Massive Stars or White Dwarfs?

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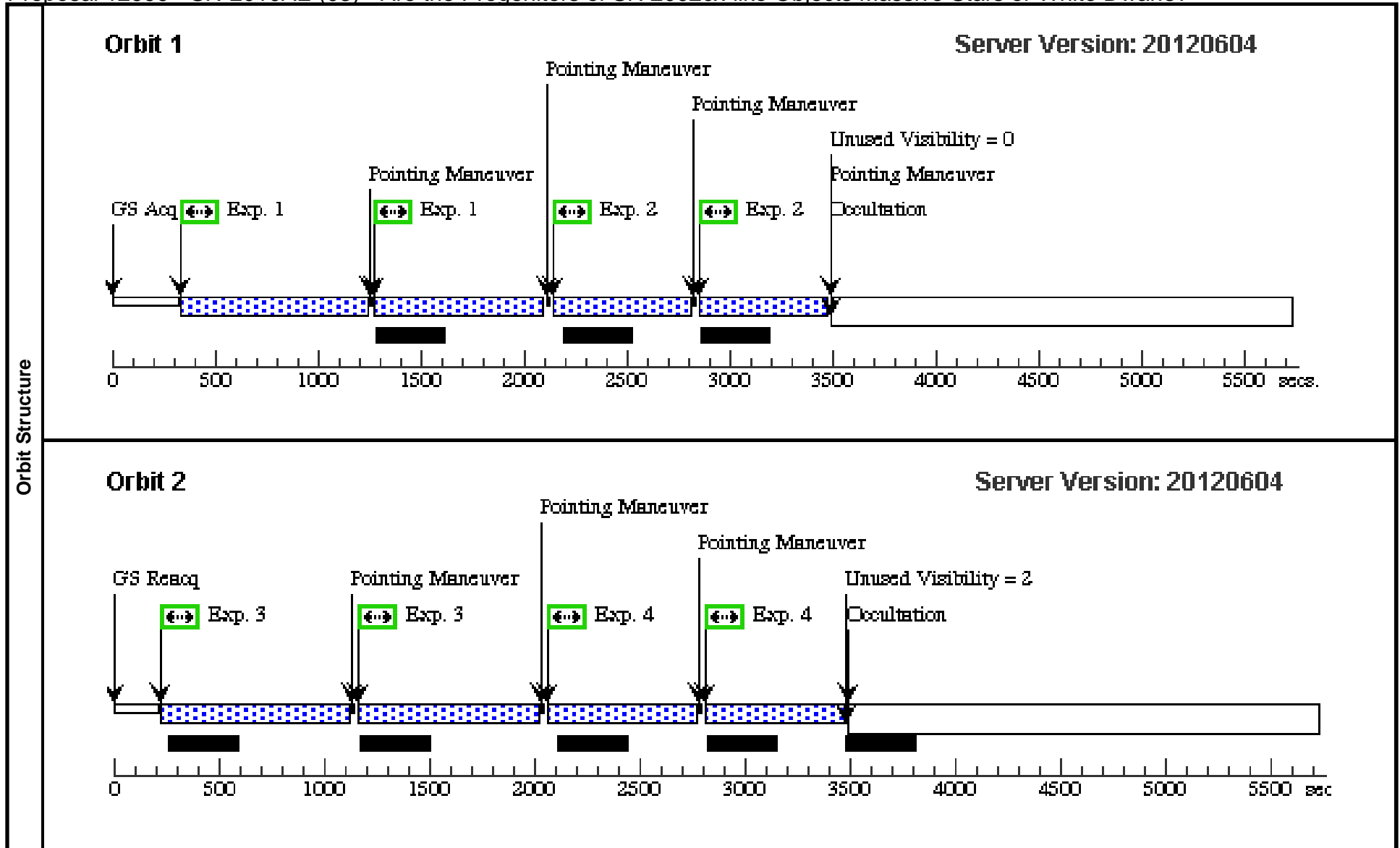
Visit	Proposal 12999, SN-2008HA (02), implementation Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC Special Requirements: SCHED 100%									
Patterns	#	Primary Pattern	Secondary Pattern	Exposures						
	(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=3.011 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides= Center Pattern=false		(1), (2), (3), (4)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(2)	SN-2008HA	RA: 23 34 52.6900 (353.7195417d) Dec: +18 13 35.40 (18.22650d) Equinox: J2000		V=25	Reference Frame: ICRS				
<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	(2) SN-2008HA	(2) SN-2008HA	ACS/WFC, ACCUM, WFC1	F435W			Pattern 1, Exps 1-1 in SN-2008HA (02) (1)	600 Secs [==>582.0 Secs (Pattern 1)] [==>582.0 Secs (Pattern 2)]	[1]
	2	(2) SN-2008HA	(2) SN-2008HA	ACS/WFC, ACCUM, WFC1	F555W			Pattern 1, Exps 2-2 in SN-2008HA (02) (1)	400 Secs [==>382.0 Secs (Pattern 1)] [==>382.0 Secs (Pattern 2)]	[1]
	3	(2) SN-2008HA	(2) SN-2008HA	ACS/WFC, ACCUM, WFC1	F814W			Pattern 1, Exps 3-3 in SN-2008HA (02) (1)	600 Secs [==>620.0 Secs (Pattern 1)] [==>620.0 Secs (Pattern 2)]	[2]
	4	(2) SN-2008HA	(2) SN-2008HA	ACS/WFC, ACCUM, WFC1	F625W			Pattern 1, Exps 4-4 in SN-2008HA (02) (1)	400 Secs [==>420.0 Secs (Pattern 1)] [==>420.0 Secs (Pattern 2)]	[2]



Proposal 12999 - SN-2010AE (03) - Are the Progenitors of SN 2002cx-like Objects Massive Stars or White Dwarfs?

Thu Jul 12 03:18:37 GMT 2012

Visit	Proposal 12999, SN-2010AE (03), implementation Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC Special Requirements: (none)									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
		(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=3.011 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides= Center Pattern=false		(1), (2), (3), (4)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(3)	SN-2010AE	RA: 07 15 54.6500 (108.9777083d) Dec: -57 20 36.90 (-57.34358d) Equinox: J2000		V=25	Reference Frame: ICRS				
	<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		(3) SN-2010AE	ACS/WFC, ACCUM, WFC1	F435W			Pattern 1, Exps 1-1 in SN-2010AE (03) (1)	600 Secs [==>701.0 Secs (Pattern 1)] [==>701.0 Secs (Pattern 2)]	[1]
	2		(3) SN-2010AE	ACS/WFC, ACCUM, WFC1	F555W			Pattern 1, Exps 2-2 in SN-2010AE (03) (1)	400 Secs [==>501.0 Secs (Pattern 1)] [==>501.0 Secs (Pattern 2)]	[1]
	3		(3) SN-2010AE	ACS/WFC, ACCUM, WFC1	F814W			Pattern 1, Exps 3-3 in SN-2010AE (03) (1)	600 Secs [==>739.0 Secs (Pattern 1)] [==>739.0 Secs (Pattern 2)]	[2]
	4		(3) SN-2010AE	ACS/WFC, ACCUM, WFC1	F625W			Pattern 1, Exps 4-4 in SN-2010AE (03) (1)	400 Secs [==>539.0 Secs (Pattern 1)] [==>539.0 Secs (Pattern 2)]	[2]



Proposal 12999 - SN-2010EL (04) - Are the Progenitors of SN 2002cx-like Objects Massive Stars or White Dwarfs?

Thu Jul 12 03:18:39 GMT 2012

Visit	Proposal 12999, SN-2010EL (04), implementation Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC Special Requirements: SCHED 100%; ORIENT 140D TO 230 D <i>Comments: Orientations were chosen to get most of the galaxy. They can be expanded, but the science will be impacted somewhat. The more of the galaxy, the better. In particular, I was trying to get the bright spiral arm to the north east. The best angles are near 230.</i>										
	Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
(1)		Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=3.011 Line Spacing=		Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides= Center Pattern=false					(1), (2), (3), (4)		
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes	Miscellaneous			
	(4)	SN-2010EL	RA: 04 19 58.8300 (64.9951250d) Dec: -54 56 38.50 (-54.94403d) Equinox: J2000				V=25	Reference Frame: ICRS			
<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		(4) SN-2010EL	ACS/WFC, ACCUM, WFC1	F435W			Pattern 1, Exps 1-1 in SN-2010EL (04) (1)	600 Secs		
									[==>584.0 Secs (Pattern 1)]		[1]
									[==>584.0 Secs (Pattern 2)]		
	2		(4) SN-2010EL	ACS/WFC, ACCUM, WFC1	F555W			Pattern 1, Exps 2-2 in SN-2010EL (04) (1)	400 Secs		
								[==>384.0 Secs (Pattern 1)]		[1]	
								[==>384.0 Secs (Pattern 2)]			
3		(4) SN-2010EL	ACS/WFC, ACCUM, WFC1	F814W			Pattern 1, Exps 3-3 in SN-2010EL (04) (1)	600 Secs			
								[==>622.0 Secs (Pattern 1)]		[2]	
								[==>622.0 Secs (Pattern 2)]			
4		(4) SN-2010EL	ACS/WFC, ACCUM, WFC1	F625W			Pattern 1, Exps 4-4 in SN-2010EL (04) (1)	400 Secs			
								[==>422.0 Secs (Pattern 1)]		[2]	
								[==>422.0 Secs (Pattern 2)]			

