



# 11709 - Stretching the diversity of cosmic explosions: The supernovae of gamma-ray bursts

Cycle: 17, Proposal Category: GO  
(Availability Mode: SUPPORTED)

## INVESTIGATORS

<i>Name</i>	<i>Institution</i>	<i>E-Mail</i>
<b>Dr. David Bersier (PI) (ESA Member)</b>	<b>Liverpool John Moores University</b>	<b>dfb@astro.livjm.ac.uk</b>
Dr. Andrew S. Fruchter (CoI) (AdminUSPI) (Contact)	Space Telescope Science Institute	fruchter@stsci.edu
Dr. Peter Garnavich (CoI)	University of Notre Dame	pgarnavi@nd.edu
Dr. Javier Gorosabel (CoI) (ESA Member)	Instituto de Astrofísica de Andalucía (IAA)	jgu@iaa.es
Dr. Stephen Holland (CoI)	NASA Goddard Space Flight Center	Stephen.T.Holland@nasa.gov
Dr. Daniel Kasen (CoI)	University of California - Santa Cruz	kasen@pha.jhu.edu
Dr. Andrew J. Levan (CoI) (ESA Member)	The University of Warwick	a.j.levan@warwick.ac.uk
Dr. Paolo Mazzali (CoI) (ESA Member)	INAF, Osservatorio Astronomico di Trieste	mazzali@ts.astro.it
Dr. Peter E. Nugent (CoI)	Lawrence Berkeley National Laboratory	penugent@lbl.gov
Dr. Elena Pian (CoI) (ESA Member)	INAF, Osservatorio Astronomico di Trieste	pian@ts.astro.it
Dr. Nial R. Tanvir (CoI) (ESA Member)	University of Leicester	nrt3@star.le.ac.uk
Prof. Ralph A.M.J. Wijers (CoI) (ESA Member)	Universiteit van Amsterdam	rwijers@science.uva.nl
Dr. Stan Woosley (CoI)	University of California - Santa Cruz	woosley@ucolick.org

## 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>
M1	(2) GRB-SN2	ACS/WFC	1	21-Mar-2010 21:01:10.0	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>
M2	(2) GRB-SN2	WFC3/IR	1	21-Mar-2010 21:01:14.0	yes
N1	(2) GRB-SN2	ACS/WFC	1	21-Mar-2010 21:01:18.0	yes
N2	(2) GRB-SN2	WFC3/IR	1	21-Mar-2010 21:01:21.0	yes
O1	(2) GRB-SN2	ACS/WFC	1	21-Mar-2010 21:01:24.0	yes
O2	(2) GRB-SN2	WFC3/IR	1	21-Mar-2010 21:01:27.0	yes
P1	(2) GRB-SN2	ACS/WFC	1	21-Mar-2010 21:01:30.0	yes
Q1	(2) GRB-SN2	ACS/WFC	1	21-Mar-2010 21:01:34.0	yes
AA	(1) GRB100316D	WFC3/UVIS	1	21-Mar-2010 21:01:37.0	yes
AB	(1) GRB100316D	WFC3/IR	1	21-Mar-2010 21:01:41.0	yes
BA	(1) GRB100316D	WFC3/UVIS	1	21-Mar-2010 21:01:45.0	yes
BB	(1) GRB100316D	WFC3/IR	1	21-Mar-2010 21:01:51.0	yes
CA	(1) GRB100316D	WFC3/UVIS	1	21-Mar-2010 21:01:54.0	yes
CB	(1) GRB100316D	WFC3/IR	1	21-Mar-2010 21:01:58.0	yes
DA	(1) GRB100316D	WFC3/UVIS	1	21-Mar-2010 21:02:03.0	yes
EA	(1) GRB100316D	WFC3/UVIS	1	21-Mar-2010 21:02:06.0	yes

16 Total Orbits Used

### **ABSTRACT**

While the association between gamma-ray bursts (GRBs) and massive stars is robust, there is a large diversity of properties among supernovae (SNe) associated with GRBs. The converse is also true: Several recent events show that there is a large brightness range among high energy transients associated with SNe. As part of a comprehensive program, we propose to use HST in order to search for and characterize the SNe associated with GRB.

HST offers the means to cleanly separate the light curve of the GRB afterglow from the supernova, and to remove the contamination from the host galaxy, opening a clear path to the fundamental parameters of the SN, and thence to the progenitor. From these observations, we will determine the absolute magnitude at maximum, the shape of the spectral energy distribution, and any change over time of the energy distribution. We will also measure the rate of decay of the exponential tail.

Merged with the ground-based data that we will obtain for each event, we will be able to compare our data set to models and constrain the energy of the explosion, the mass of the ejecta and the mass of Nickel synthesized during the explosion. These results will shed light on the apparent variety of supernovae associated with gamma-ray bursts and X-ray flashes, and on the relation between these SNe and other, more common, types of core-collapse explosions.

### **OBSERVING DESCRIPTION**

We will observe two supernovae associated with a gamma-ray burst.

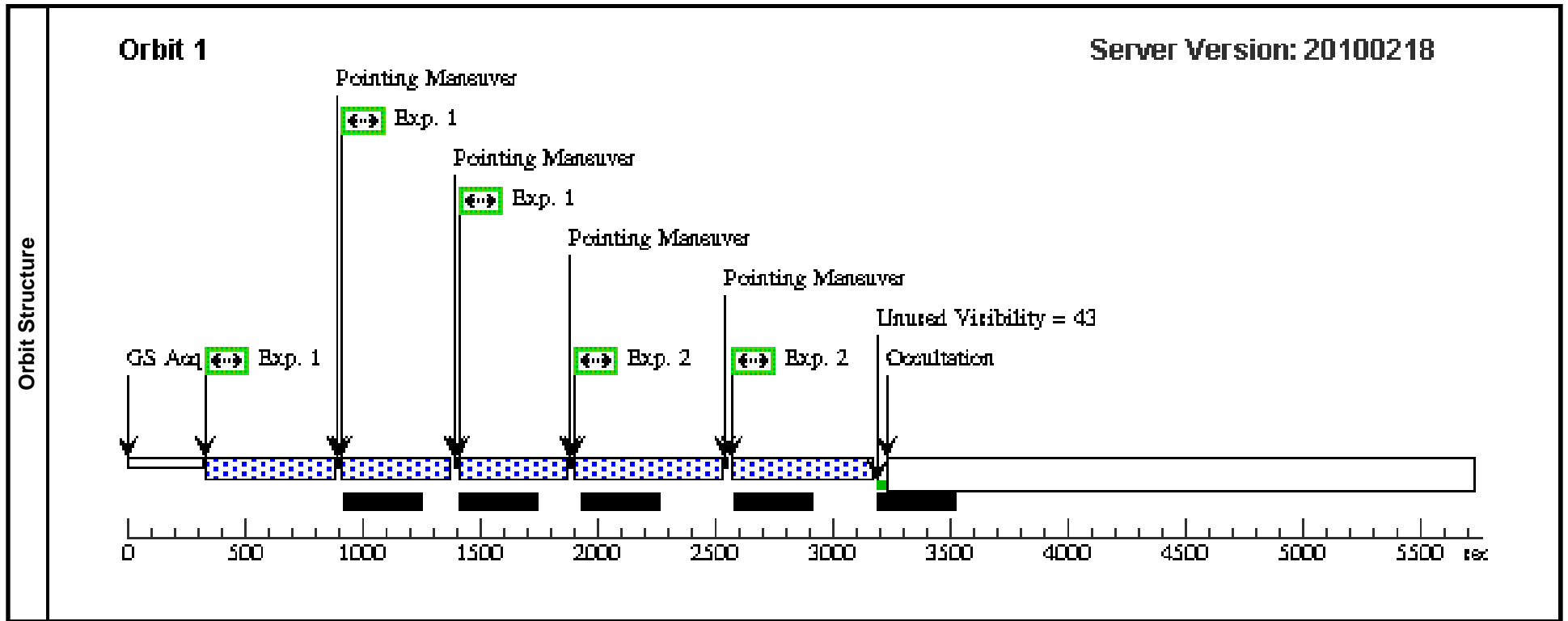
The first set of observations will consist of optical (ACS/WFC) and near-IR data (WFC3/IR), obtained 7-9 days after burst. The second and third observations will also consist of UV, optical and near-IR data, obtained at 14-18 days, and 24-30 days after burst respectively. Late observations, at 50 and 150 days after burst will also be obtained in the optical to monitor the exponential part of the light curve. Very late time images will be obtained in all filters about one year after the burst. This will provide a template for accurate subtraction of the host galaxy.

In all observations, the exact filters used will depend on the redshift of the GRB.

Proposal 11709 - Visit M1 - Stretching the diversity of cosmic explosions: The supernovae of gamma-ray bursts

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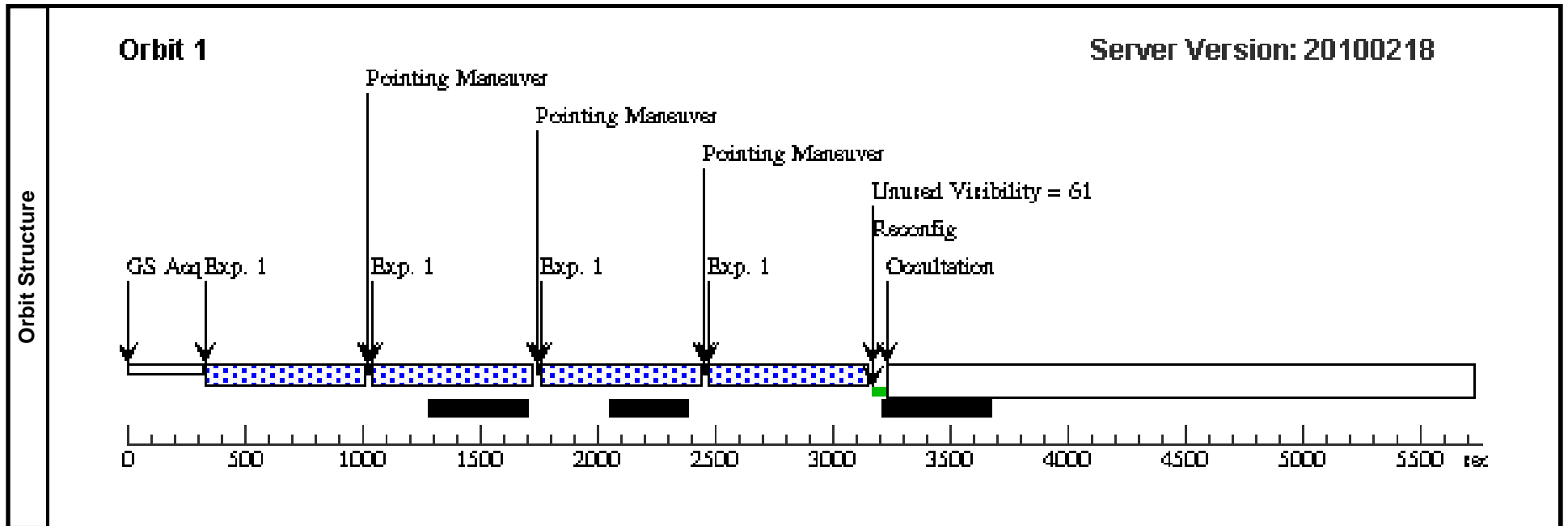
<b>Visit</b>	<b>Proposal 11709, Visit M1, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: ACS/WFC Special Requirements: GROUP M1,M2 WITHIN 24H Comments: First visit on high z SN, optical (ACS/WFC), F625W/F850LP filters. To do 7-10 days after GRB.									
	<b>Patterns</b>	#	<b>Primary Pattern</b>	<b>Secondary Pattern</b>	<b>Exposures</b>					
	(3)	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	(2)						
	(4)	Pattern Type=LINE Purpose=DITHER Number Of Points=3 Point Spacing=.4235 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false	(1)						
<b>Fixed Targets</b>	#	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>	<b>Miscellaneous</b>				
	(2)	GRB-SN2	RA: 00 00 0.0000 (.0000000d) Dec: +00 00 0.00 (.00000d) Equinox: J2000		V=24+/-2	Reference Frame: ICRS				
<b>Exposures</b>	#	<b>Label</b>	<b>Target</b>	<b>Config,Mode,Aperture</b>	<b>Spectral Els.</b>	<b>Opt. Params.</b>	<b>Special Reqs.</b>	<b>Groups</b>	<b>Exp. Time/[Actual Dur.]</b>	<b>Orbit</b>
	1	F625W/1	(2) GRB-SN2	ACS/WFC, ACCUM, WFC1	F625W			Pattern 4, Exps 1-1 (4)	340 Secs [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]
	2	F850LP/1	(2) GRB-SN2	ACS/WFC, ACCUM, WFC1	F850LP			Pattern 3, Exps 2-2 (3)	480 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]



Proposal 11709 - Visit M2 - Stretching the diversity of cosmic explosions: The supernovae of gamma-ray bursts

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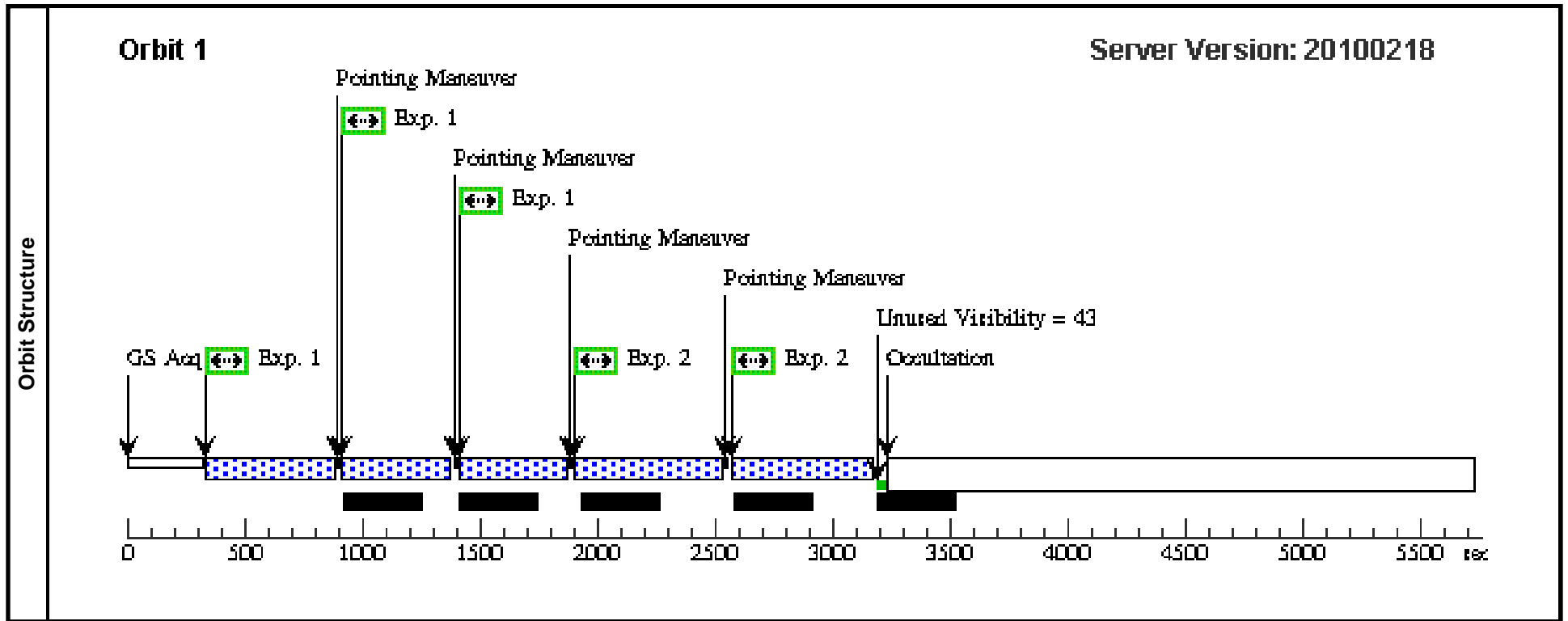
<b>Visit</b>	<b>Proposal 11709, Visit M2, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/IR Special Requirements: GROUP M2,M1 WITHIN 24H Comments: First visit on high z SN. WFC/IR observations. To do 7-10 days after GRB.										
	<b>Patterns</b>	<b>#</b>	<b>Primary Pattern</b>				<b>Secondary Pattern</b>			<b>Exposures</b>	
(5)		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						(1)		
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>		<b>Fluxes</b>	<b>Miscellaneous</b>				
	(2)	GRB-SN2	RA: 00 00 0.0000 (.0000000d) Dec: +00 00 0.00 (.00000d) Equinox: J2000			V=24+/-2	Reference Frame: ICRS				
<b>Exposures</b>	<b>#</b>	<b>Label</b>	<b>Target</b>	<b>Config,Mode,Aperture</b>	<b>Spectral Els.</b>	<b>Opt. Params.</b>	<b>Special Reqs.</b>	<b>Groups</b>	<b>Exp. Time/[Actual Dur.]</b>		<b>Orbit</b>
	1	WFC/F160 W/1	(2) GRB-SN2	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=14; SAMP-SEQ=SPAR S50		Pattern 5, Exps 1-1 (5)	[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]		[1]



Proposal 11709 - Visit N1 - Stretching the diversity of cosmic explosions: The supernovae of gamma-ray bursts

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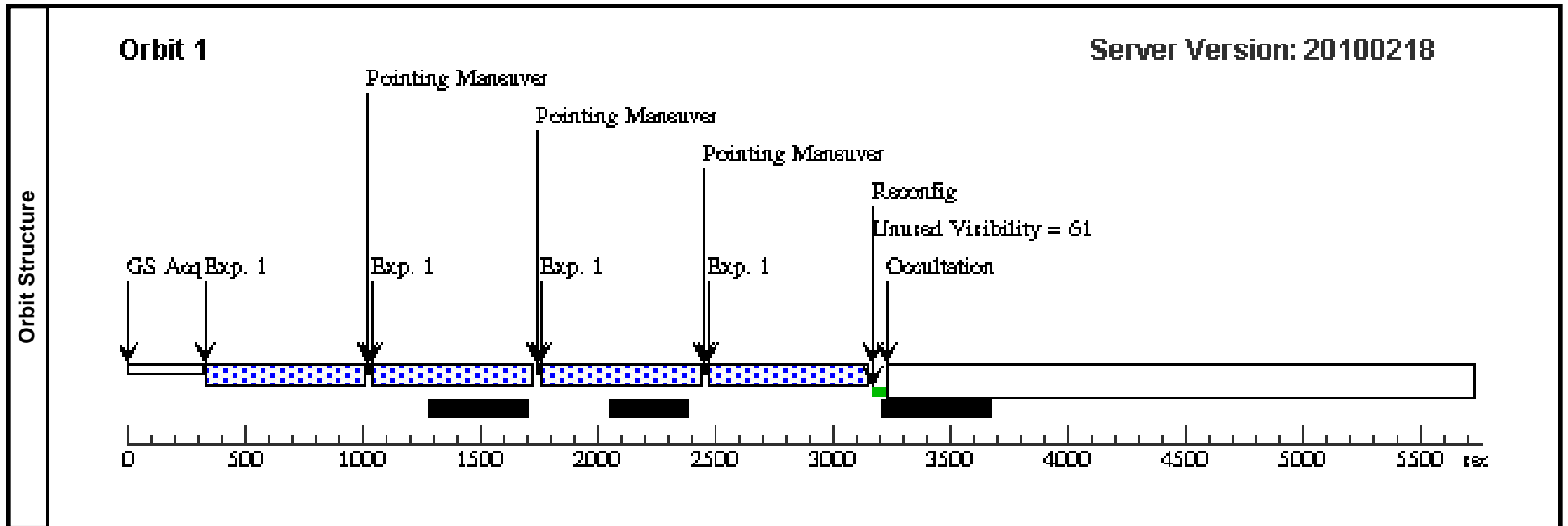
<b>Visit</b>	<b>Proposal 11709, Visit N1, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: ACS/WFC Special Requirements: AFTER M1 BY 6 D TO 9 D; GROUP N1,N2 WITHIN 24H Comments: <i>Second visit on high z SN, optical (ACS/WFC), F625W/F850LP filters.</i> To do 14-18 days after GRB.									
<b>Patterns</b>	<b>#</b>	<b>Primary Pattern</b>	<b>Secondary Pattern</b>	<b>Exposures</b>						
	(3)	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		(2)					
(4)	Pattern Type=LINE Purpose=DITHER Number Of Points=3 Point Spacing=.4235 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false		(1)						
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>	<b>Miscellaneous</b>				
	(2)	GRB-SN2	RA: 00 00 0.0000 (.0000000d) Dec: +00 00 0.00 (.00000d) Equinox: J2000		V=24+/-2	Reference Frame: ICRS				
<b>Exposures</b>	<b>#</b>	<b>Label</b>	<b>Target</b>	<b>Config,Mode,Aperture</b>	<b>Spectral Els.</b>	<b>Opt. Params.</b>	<b>Special Reqs.</b>	<b>Groups</b>	<b>Exp. Time/[Actual Dur.]</b>	<b>Orbit</b>
	1	F625W/2	(2) GRB-SN2	ACS/WFC, ACCUM, WFC1	F625W			Pattern 4, Exps 1-1 (4)	340 Secs [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[1]
2	F850LP/2	(2) GRB-SN2	ACS/WFC, ACCUM, WFC1	F850LP			Pattern 3, Exps 2-2 (3)	480 Secs [==>(Pattern 1)] [==>(Pattern 2)]	[1]	



Proposal 11709 - Visit N2 - Stretching the diversity of cosmic explosions: The supernovae of gamma-ray bursts

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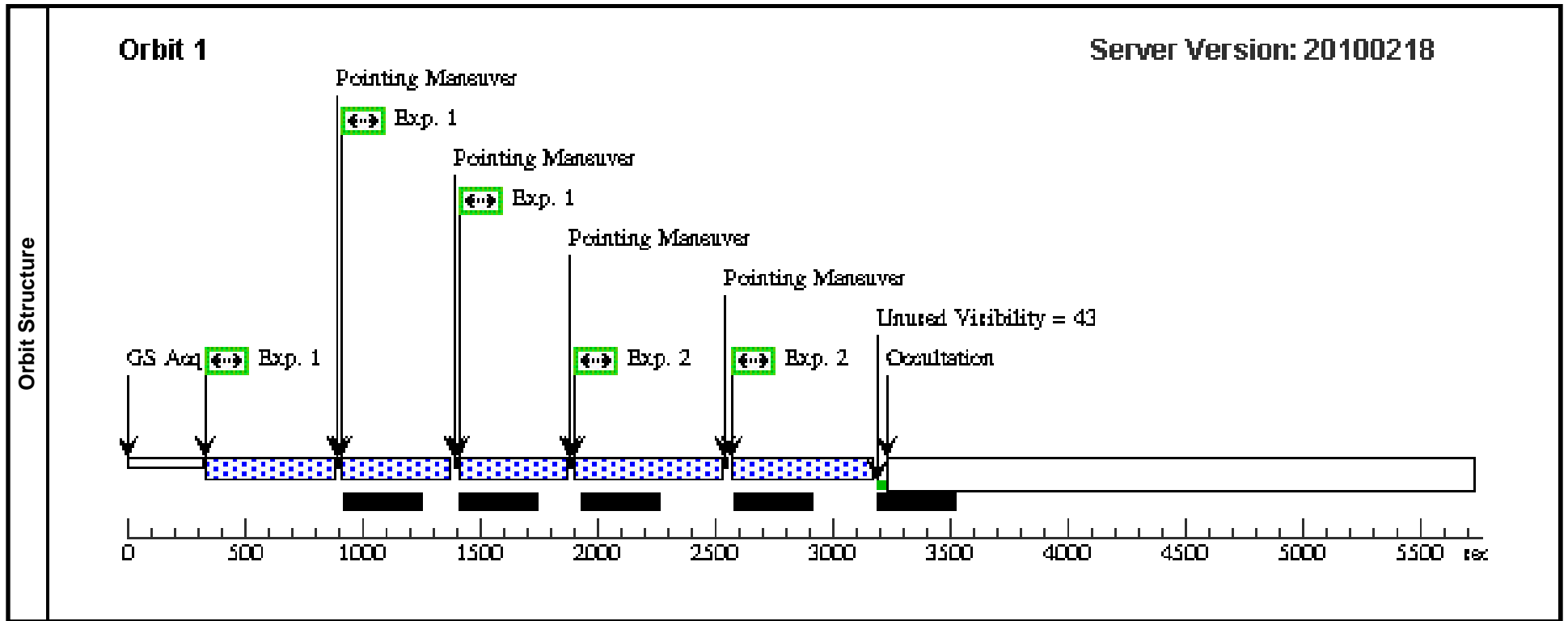
<b>Visit</b>	<b>Proposal 11709, Visit N2, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/IR Special Requirements: AFTER M2 BY 6 D TO 9 D; GROUP N2,N1 WITHIN 24H Comments: <i>Second visit on high z SN. WFC/IR observations. To do 14-18 days after GRB.</i>									
	<b>Patterns</b>	<b>#</b>	<b>Primary Pattern</b>				<b>Secondary Pattern</b>			<b>Exposures</b>
(5)		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						(1)	
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>		<b>Fluxes</b>	<b>Miscellaneous</b>			
	(2)	GRB-SN2	RA: 00 00 0.0000 (.0000000d) Dec: +00 00 0.00 (.00000d) Equinox: J2000			V=24+/-2	Reference Frame: ICRS			
<b>Exposures</b>	<b>#</b>	<b>Label</b>	<b>Target</b>	<b>Config,Mode,Aperture</b>	<b>Spectral Els.</b>	<b>Opt. Params.</b>	<b>Special Reqs.</b>	<b>Groups</b>	<b>Exp. Time/[Actual Dur.]</b>	<b>Orbit</b>
	1	WFC/F160 W/2	(2) GRB-SN2	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=14; SAMP-SEQ=SPAR S50		Pattern 5, Exps 1-1 (5)	[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]



Proposal 11709 - Visit O1 - Stretching the diversity of cosmic explosions: The supernovae of gamma-ray bursts

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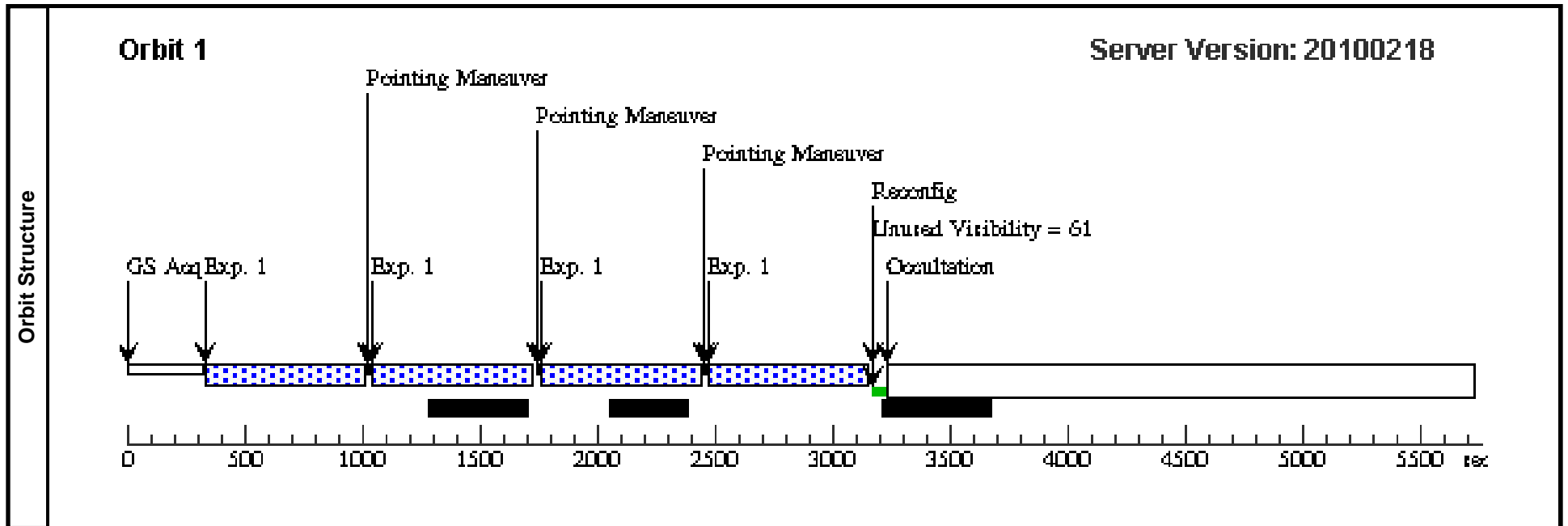
Visit	<b>Proposal 11709, Visit O1, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: ACS/WFC Special Requirements: AFTER N1 BY 9 D TO 12 D; GROUP O1,O2 WITHIN 48H Comments: <i>Third visit on high z SN, optical (ACS/WFC), F625W/F850LP filters.</i> To do ~25 days after GRB.									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
		(3)	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		(2)				
	(4)	Pattern Type=LINE Purpose=DITHER Number Of Points=3 Point Spacing=.4235 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false		(1)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(2)	GRB-SN2	RA: 00 00 0.0000 (.0000000d) Dec: +00 00 0.00 (.00000d) Equinox: J2000		V=24+/-2	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	F625W/3	(2) GRB-SN2	ACS/WFC, ACCUM, WFC1	F625W				Pattern 4, Exps 1-1 (4)	340 Secs [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]
2	F850LP/3	(2) GRB-SN2	ACS/WFC, ACCUM, WFC1	F850LP				Pattern 3, Exps 2-2 (3)	480 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]



Proposal 11709 - Visit O2 - Stretching the diversity of cosmic explosions: The supernovae of gamma-ray bursts

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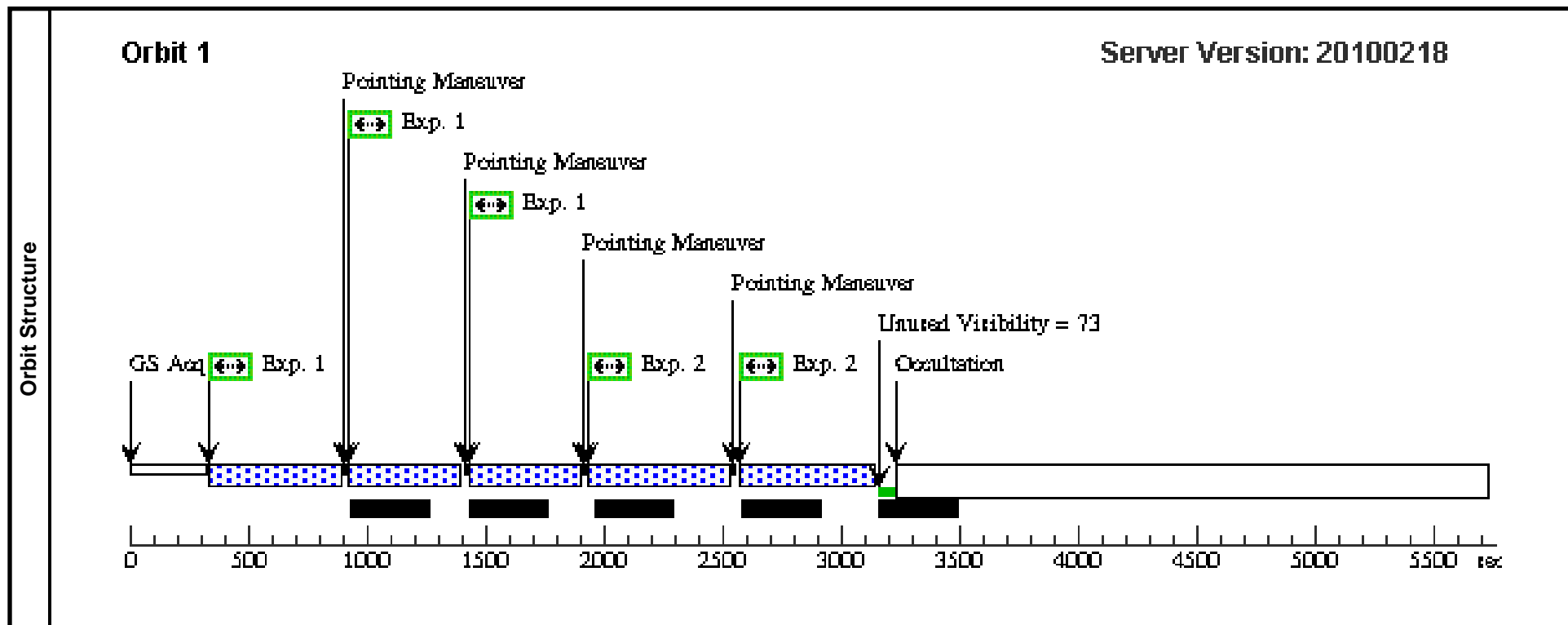
<b>Visit</b>	<b>Proposal 11709, Visit O2, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/IR Special Requirements: AFTER N2 BY 9 D TO 12 D; GROUP O2,O1 WITHIN 48H Comments: <i>Third visit on high z SN. WFC/IR observations.</i> To do ~25 days after GRB.									
	<b>Patterns</b>	<b>#</b>	<b>Primary Pattern</b>				<b>Secondary Pattern</b>			<b>Exposures</b>
(5)		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						(1)	
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>		<b>Fluxes</b>	<b>Miscellaneous</b>			
	(2)	GRB-SN2	RA: 00 00 0.0000 (.0000000d) Dec: +00 00 0.00 (.00000d) Equinox: J2000			V=24+/-2	Reference Frame: ICRS			
<b>Exposures</b>	<b>#</b>	<b>Label</b>	<b>Target</b>	<b>Config,Mode,Aperture</b>	<b>Spectral Els.</b>	<b>Opt. Params.</b>	<b>Special Reqs.</b>	<b>Groups</b>	<b>Exp. Time/[Actual Dur.]</b>	<b>Orbit</b>
	1	WFC/F160 W/3	(2) GRB-SN2	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=14; SAMP-SEQ=SPAR S50		Pattern 5, Exps 1-1 (5)	[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]



Proposal 11709 - Visit P1 - Stretching the diversity of cosmic explosions: The supernovae of gamma-ray bursts

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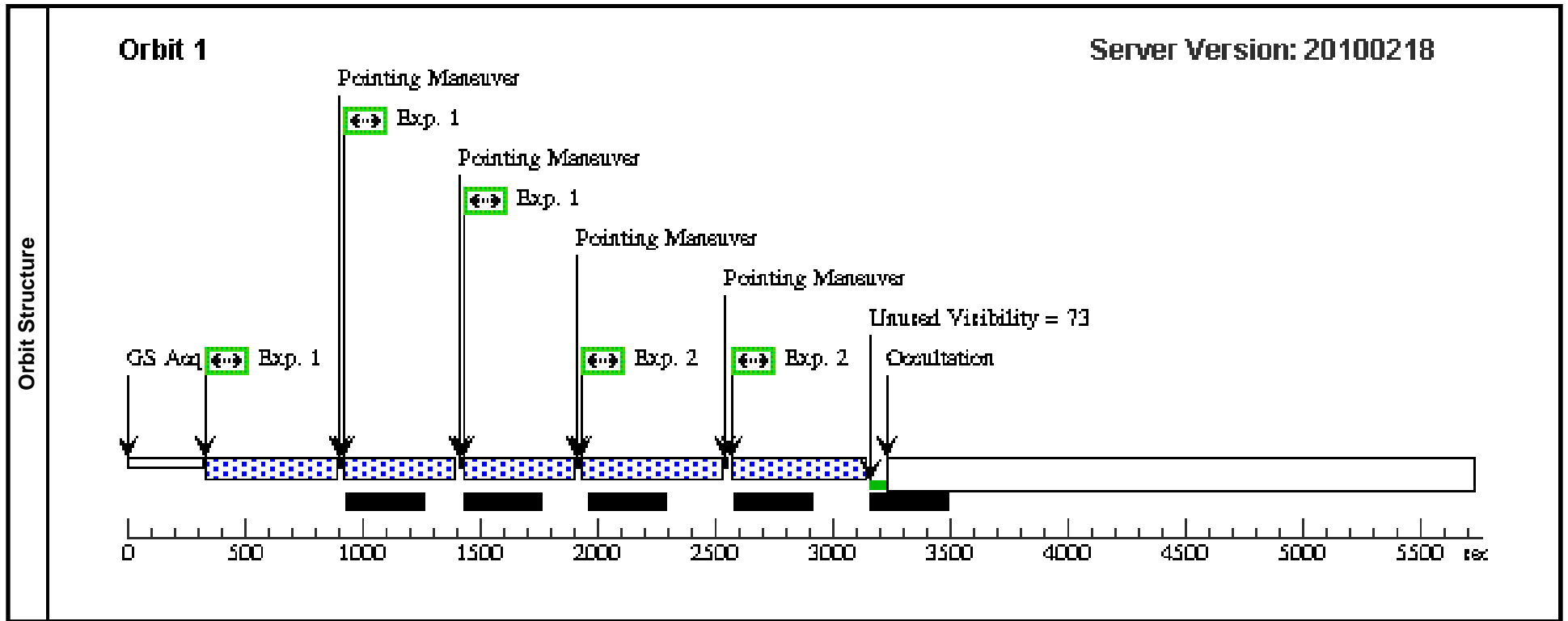
<b>Visit</b>	<b>Proposal 11709, Visit P1, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: ACS/WFC Special Requirements: AFTER O1 BY 22 D TO 30 D Comments: <i>Fourth visit on high z SN, optical (ACS/WFC), F625W/F850LP filters. To do ~50 days after GRB.</i>									
	<b>Patterns</b>	<b>#</b>	<b>Primary Pattern</b>	<b>Secondary Pattern</b>	<b>Exposures</b>					
	(3)	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	(2)						
	(4)	Pattern Type=LINE Purpose=DITHER Number Of Points=3 Point Spacing=.4235 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false	(1)						
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>	<b>Miscellaneous</b>				
	(2)	GRB-SN2	RA: 00 00 0.0000 (.0000000d) Dec: +00 00 0.00 (.00000d) Equinox: J2000		V=24+/-2	Reference Frame: ICRS				
<b>Exposures</b>	<b>#</b>	<b>Label</b>	<b>Target</b>	<b>Config,Mode,Aperture</b>	<b>Spectral Els.</b>	<b>Opt. Params.</b>	<b>Special Reqs.</b>	<b>Groups</b>	<b>Exp. Time/[Actual Dur.]</b>	<b>Orbit</b>
	1	F625W/4	(2) GRB-SN2	ACS/WFC, ACCUM, WFC1	F625W			Pattern 4, Exps 1-1 (4)	350 Secs [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]
	2	F850LP/4	(2) GRB-SN2	ACS/WFC, ACCUM, WFC1	F850LP			Pattern 3, Exps 2-2 (3)	450 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]



Proposal 11709 - Visit Q1 - Stretching the diversity of cosmic explosions: The supernovae of gamma-ray bursts

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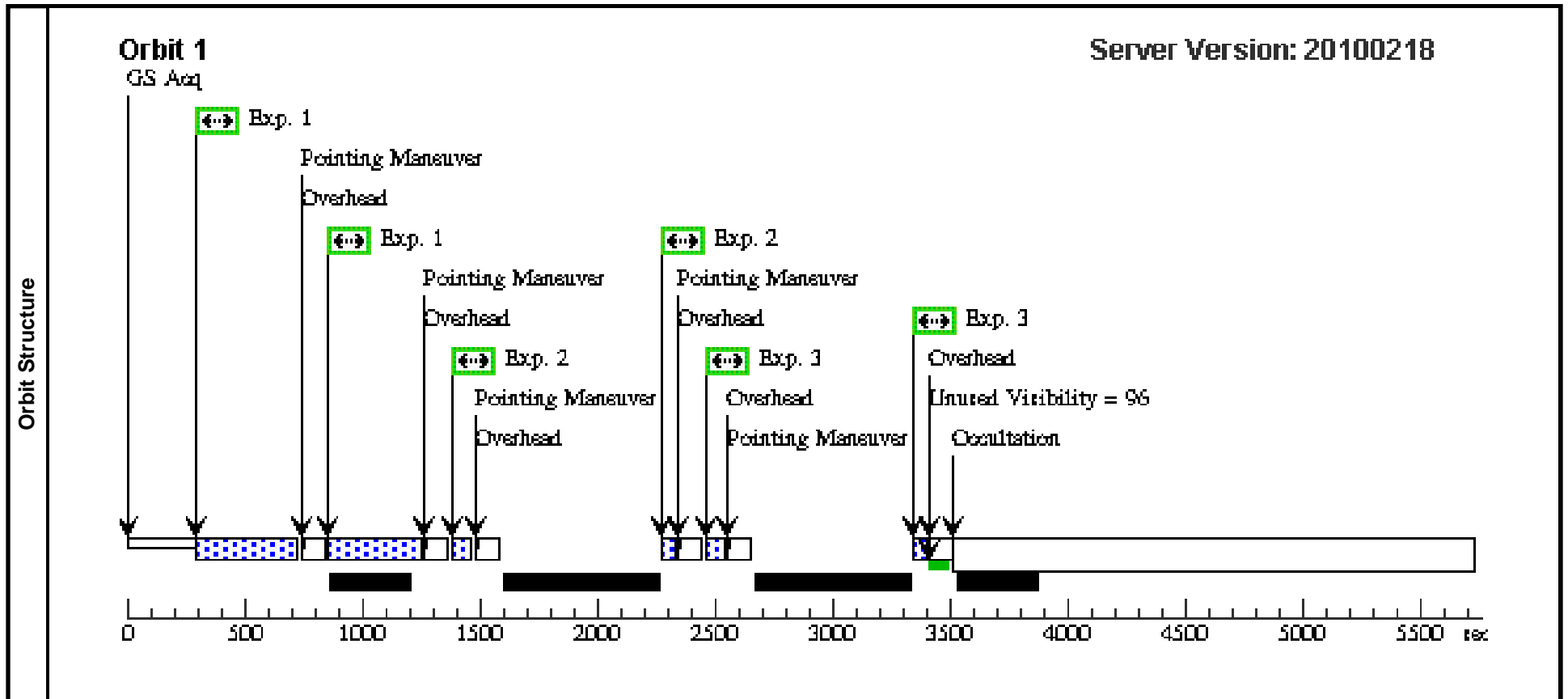
Visit	<b>Proposal 11709, Visit Q1, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: ACS/WFC Special Requirements: AFTER P1 BY 90 D TO 110 D <i>Comments: Fifth visit on high z SN, optical (ACS/WFC), F625W/F850LP filters.                      To do ~150 days after GRB.</i>									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
		(3)	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		(2)				
	(4)	Pattern Type=LINE Purpose=DITHER Number Of Points=3 Point Spacing=.4235 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false		(1)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(2)	GRB-SN2	RA: 00 00 0.0000 (.0000000d) Dec: +00 00 0.00 (.00000d) Equinox: J2000		V=24+/-2	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	F625W/5	(2) GRB-SN2	ACS/WFC, ACCUM, WFC1	F625W				Pattern 4, Exps 1-1 (4)	350 Secs [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]
2	F850LP/5	(2) GRB-SN2	ACS/WFC, ACCUM, WFC1	F850LP				Pattern 3, Exps 2-2 (3)	450 Secs [==>(Pattern 1)] [==>(Pattern 2)]	[1]



Proposal 11709 - Visit AA - Stretching the diversity of cosmic explosions: The supernovae of gamma-ray bursts

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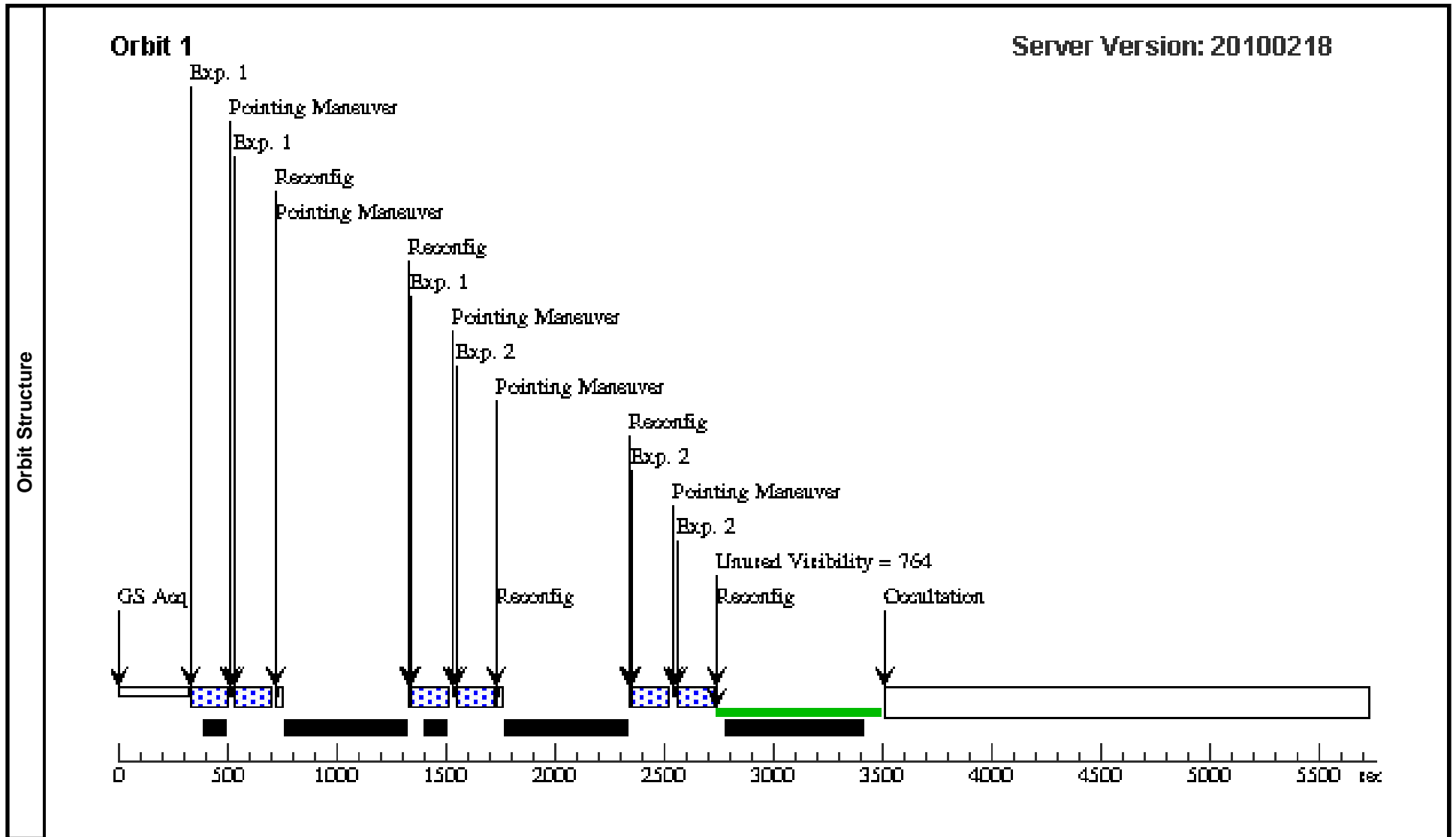
Visit	<b>Proposal 11709, Visit AA, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS Special Requirements: GROUP AA,AB WITHIN 24H Comments: <i>First visit on low-z SN. WFC/UVIS observations.</i> To do 7-10 days after GRB.									
	Patterns	#	Primary Pattern				Secondary Pattern			Exposures
		(6)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false						(1), (2), (3)
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections		Fluxes	Miscellaneous			
	(1)	GRB100316D	RA: 07 10 30.7700 (107.6282083d) Dec: -56 15 20.70 (-56.25575d) Equinox: J2000			V=22+/-2	Reference Frame: ICRS			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	WFC3/F336 W	(1) GRB100316D	WFC3/UVIS, ACCUM, UVIS1	F336W	CR-SPLIT=NO		Pattern 6, Exps 1-1 (6)	400 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	2	WFC3/F555 W	(1) GRB100316D	WFC3/UVIS, ACCUM, UVIS1	F555W	CR-SPLIT=NO		Pattern 6, Exps 2-2 (6)	60 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	3	WFC3/F814 W	(1) GRB100316D	WFC3/UVIS, ACCUM, UVIS1	F814W	CR-SPLIT=NO		Pattern 6, Exps 3-3 (6)	60 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]



Proposal 11709 - Visit AB - Stretching the diversity of cosmic explosions: The supernovae of gamma-ray bursts

Mon Mar 22 01:02:14 GMT 2010

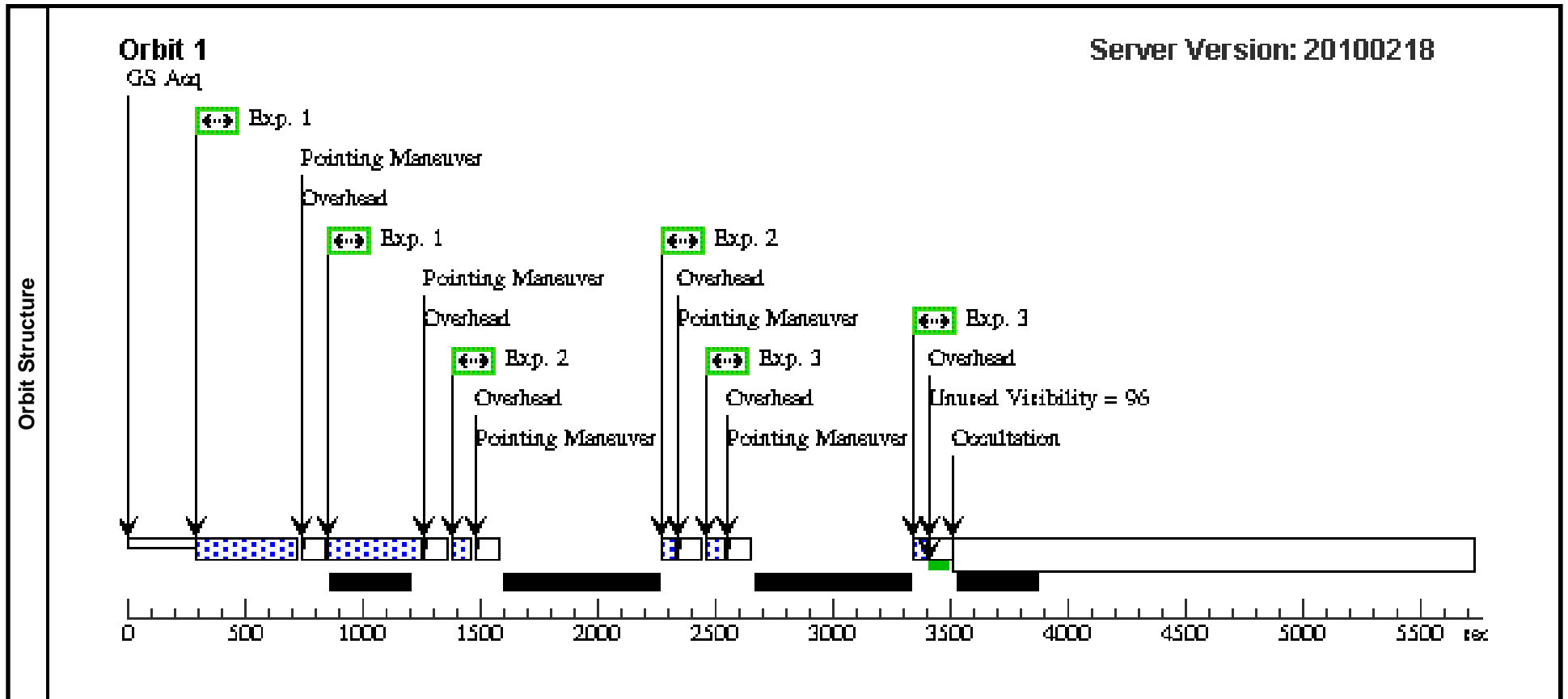
<b>Visit</b>	<b>Proposal 11709, Visit AB, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/IR Special Requirements: GROUP AB,AA WITHIN 24H Comments: First visit on low-z SN. WFC/IR observations. To do 7-10 days after GRB.									
	<b>Patterns</b>	<b>#</b>	<b>Primary Pattern</b>				<b>Secondary Pattern</b>			
(4)		Pattern Type=LINE Purpose=DITHER Number Of Points=3 Point Spacing=.4235 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false					(1), (2)		
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>		<b>Fluxes</b>	<b>Miscellaneous</b>			
	(1)	GRB100316D	RA: 07 10 30.7700 (107.6282083d) Dec: -56 15 20.70 (-56.25575d) Equinox: J2000			V=22+/-2	Reference Frame: ICRS			
<b>Exposures</b>	<b>#</b>	<b>Label</b>	<b>Target</b>	<b>Config,Mode,Aperture</b>	<b>Spectral Els.</b>	<b>Opt. Params.</b>	<b>Special Reqs.</b>	<b>Groups</b>	<b>Exp. Time/[Actual Dur.]</b>	<b>Orbit</b>
	1	WFC/F125 W/1	(1) GRB100316D	WFC3/IR, MULTIACCUM, IR	F125W	NSAMP=15; SAMP-SEQ=SPAR S10		Pattern 4, Exps 1-1 (4)	[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]
2	WFC/F160 W/1	(1) GRB100316D	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=15; SAMP-SEQ=SPAR S10		Pattern 4, Exps 2-2 (4)	[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]	



Proposal 11709 - Visit BA - Stretching the diversity of cosmic explosions: The supernovae of gamma-ray bursts

Mon Mar 22 01:02:14 GMT 2010

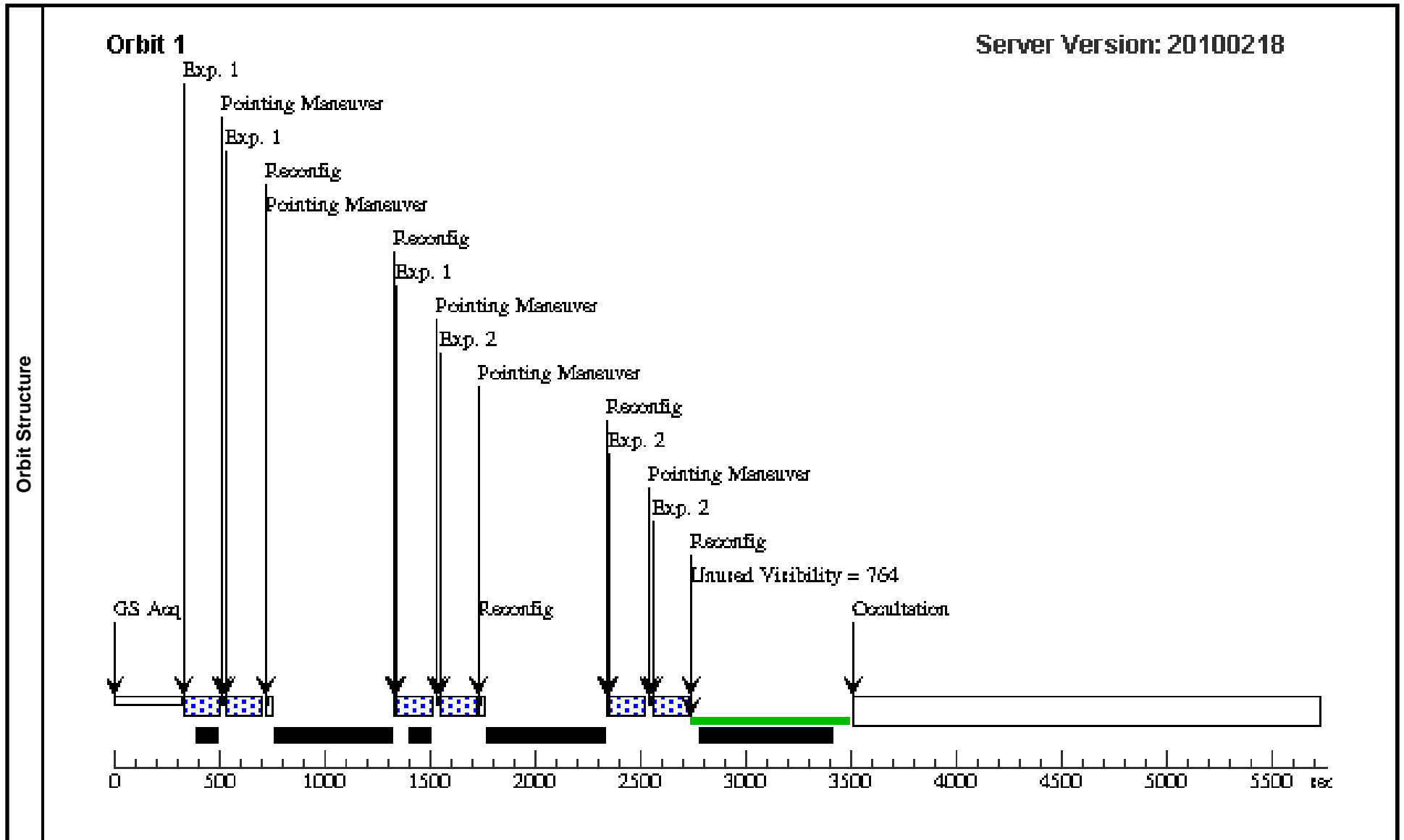
<b>Visit</b>	<b>Proposal 11709, Visit BA, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS Special Requirements: AFTER AB BY 6 D TO 10 D; GROUP BA,BB WITHIN 24H Comments: <i>Second visit on low-z SN. WFC/UVIS observations.</i> <i>To do 14-18 days after GRB.</i>									
	<b>Patterns</b>	<b>#</b>	<b>Primary Pattern</b>				<b>Secondary Pattern</b>			<b>Exposures</b>
(6)		Pattern Type=WFC3-UVIS-DITHER- LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=		Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false					(1), (2), (3)	
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>		<b>Targ. Coord. Corrections</b>		<b>Fluxes</b>	<b>Miscellaneous</b>		
	(1)	GRB100316D	RA: 07 10 30.7700 (107.6282083d) Dec: -56 15 20.70 (-56.25575d) Equinox: J2000				V=22+/-2	Reference Frame: ICRS		
<b>Exposures</b>	<b>#</b>	<b>Label</b>	<b>Target</b>	<b>Config,Mode,Aperture</b>	<b>Spectral Els.</b>	<b>Opt. Params.</b>	<b>Special Reqs.</b>	<b>Groups</b>	<b>Exp. Time/[Actual Dur.]</b>	<b>Orbit</b>
	1	WFC3/F336 W	(1) GRB100316D	WFC3/UVIS, ACCUM, UVIS1	F336W	CR-SPLIT=NO		Pattern 6, Exps 1-1 (6)	400 Secs	
									[=>(Pattern 1)]	[1]
									[=>(Pattern 2)]	
2	WFC3/F555 W	(1) GRB100316D	WFC3/UVIS, ACCUM, UVIS1	F555W	CR-SPLIT=NO		Pattern 6, Exps 2-2 (6)	60 Secs		
								[=>(Pattern 1)]	[1]	
								[=>(Pattern 2)]		
3	WFC3/F814 W	(1) GRB100316D	WFC3/UVIS, ACCUM, UVIS1	F814W	CR-SPLIT=NO		Pattern 6, Exps 3-3 (6)	60 Secs		
								[=>(Pattern 1)]	[1]	
								[=>(Pattern 2)]		



Proposal 11709 - Visit BB - Stretching the diversity of cosmic explosions: The supernovae of gamma-ray bursts

Mon Mar 22 01:02:14 GMT 2010

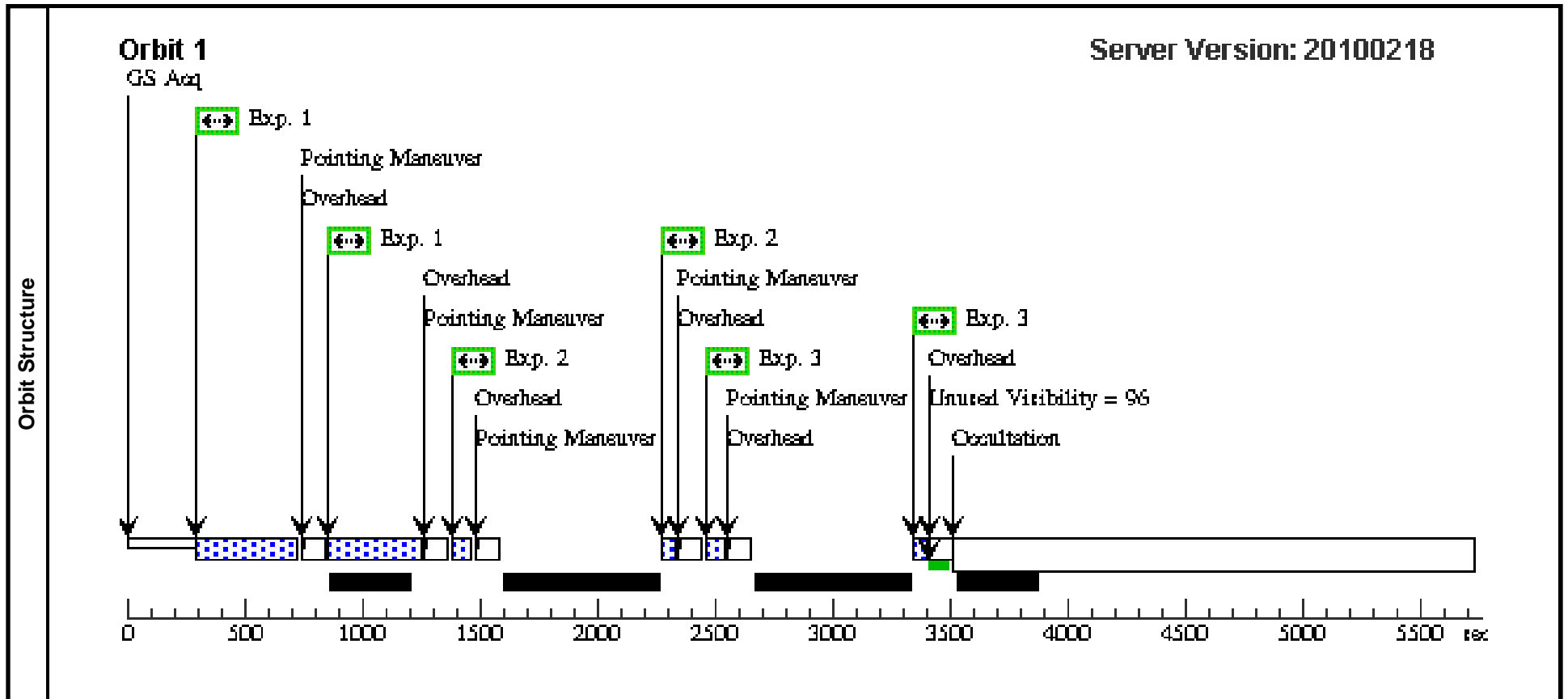
<b>Visit</b>	<b>Proposal 11709, Visit BB, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/IR Special Requirements: AFTER AB BY 6 D TO 10 D; GROUP BB,BA WITHIN 24H Comments: <i>Second visit on low-z SN. WFC/IR observations.</i> To do 14-18 days after GRB.									
	<b>Patterns</b>	<b>#</b>	<b>Primary Pattern</b>				<b>Secondary Pattern</b>			<b>Exposures</b>
(4)		Pattern Type=LINE Purpose=DITHER Number Of Points=3 Point Spacing=.4235 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false						(1), (2)	
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>		<b>Fluxes</b>	<b>Miscellaneous</b>			
	(1)	GRB100316D	RA: 07 10 30.7700 (107.6282083d) Dec: -56 15 20.70 (-56.25575d) Equinox: J2000			V=22+/-2	Reference Frame: ICRS			
<b>Exposures</b>	<b>#</b>	<b>Label</b>	<b>Target</b>	<b>Config,Mode,Aperture</b>	<b>Spectral Els.</b>	<b>Opt. Params.</b>	<b>Special Reqs.</b>	<b>Groups</b>	<b>Exp. Time/[Actual Dur.]</b>	<b>Orbit</b>
	1	WFC/F125 W/1	(1) GRB100316D	WFC3/IR, MULTIACCUM, IR	F125W	NSAMP=15; SAMP-SEQ=SPAR S10		Pattern 4, Exps 1-1 (4)	[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]
	2	WFC/F160 W/1	(1) GRB100316D	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=15; SAMP-SEQ=SPAR S10		Pattern 4, Exps 2-2 (4)	[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]



Proposal 11709 - Visit CA - Stretching the diversity of cosmic explosions: The supernovae of gamma-ray bursts

Mon Mar 22 01:02:14 GMT 2010

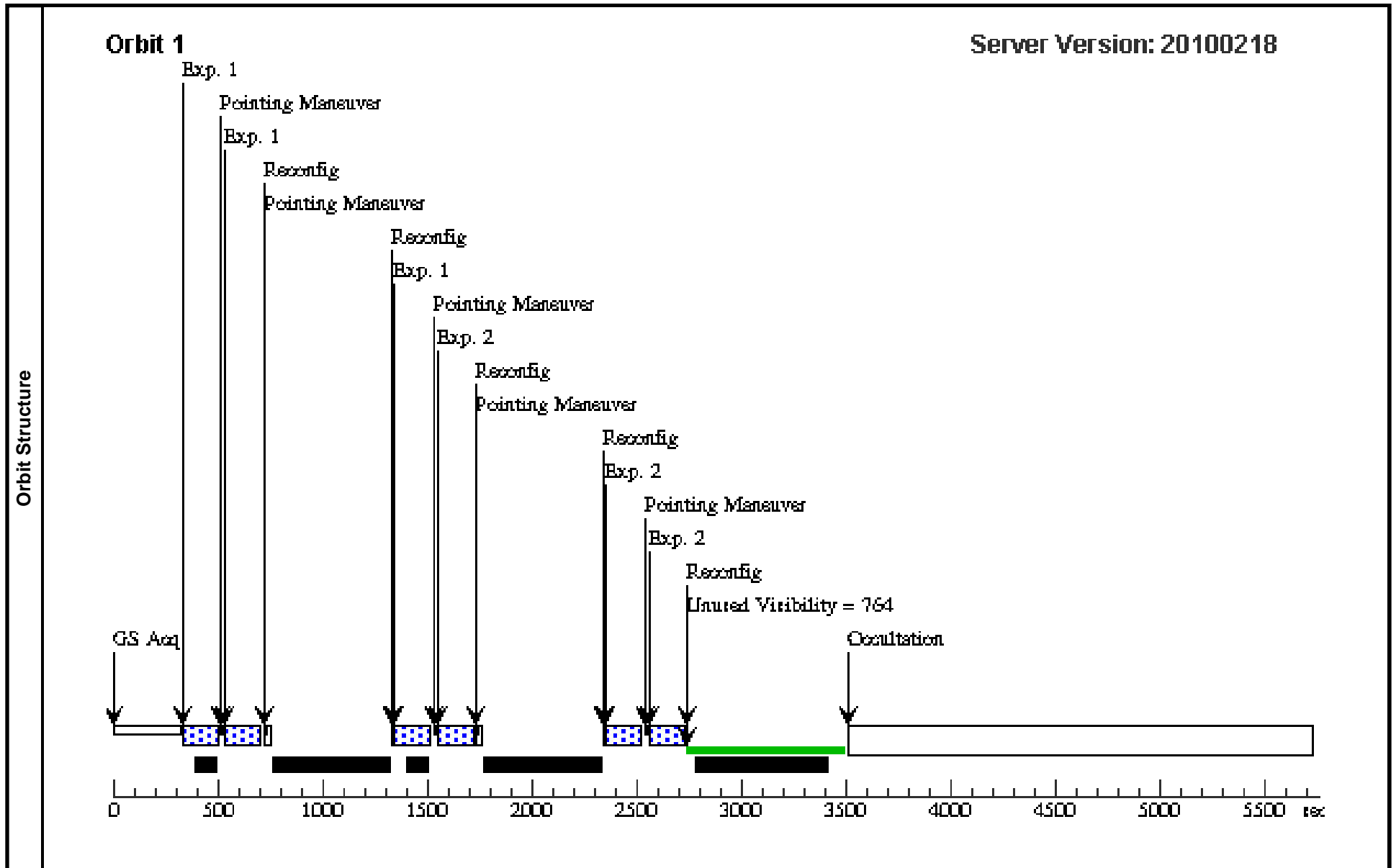
<b>Visit</b>	<b>Proposal 11709, Visit CA, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS Special Requirements: AFTER BA BY 9 D TO 12 D; GROUP CA,CB WITHIN 48H Comments: <i>Third visit on low-z SN. WFC/UVIS observations.</i> To do ~25 days after GRB.									
	<b>Patterns</b>	<b>#</b>	<b>Primary Pattern</b>				<b>Secondary Pattern</b>			<b>Exposures</b>
(6)		Pattern Type=WFC3-UVIS-DITHER- LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=				Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false			(1), (2), (3)	
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>		<b>Targ. Coord. Corrections</b>		<b>Fluxes</b>	<b>Miscellaneous</b>		
	(1)	GRB100316D	RA: 07 10 30.7700 (107.6282083d) Dec: -56 15 20.70 (-56.25575d) Equinox: J2000				V=22+/-2	Reference Frame: ICRS		
<b>Exposures</b>	<b>#</b>	<b>Label</b>	<b>Target</b>	<b>Config,Mode,Aperture</b>	<b>Spectral Els.</b>	<b>Opt. Params.</b>	<b>Special Reqs.</b>	<b>Groups</b>	<b>Exp. Time/[Actual Dur.]</b>	<b>Orbit</b>
	1	WFC3/F336 W	(1) GRB100316D	WFC3/UVIS, ACCUM, UVIS1	F336W	CR-SPLIT=NO		Pattern 6, Exps 1-1 (6)	400 Secs	
									[=>(Pattern 1)]	[1]
									[=>(Pattern 2)]	
2	WFC3/F555 W	(1) GRB100316D	WFC3/UVIS, ACCUM, UVIS1	F555W	CR-SPLIT=NO			Pattern 6, Exps 2-2 (6)	60 Secs	
									[=>(Pattern 1)]	[1]
									[=>(Pattern 2)]	
3	WFC3/F814 W	(1) GRB100316D	WFC3/UVIS, ACCUM, UVIS1	F814W	CR-SPLIT=NO			Pattern 6, Exps 3-3 (6)	60 Secs	
									[=>(Pattern 1)]	[1]
									[=>(Pattern 2)]	



Proposal 11709 - Visit CB - Stretching the diversity of cosmic explosions: The supernovae of gamma-ray bursts

Mon Mar 22 01:02:15 GMT 2010

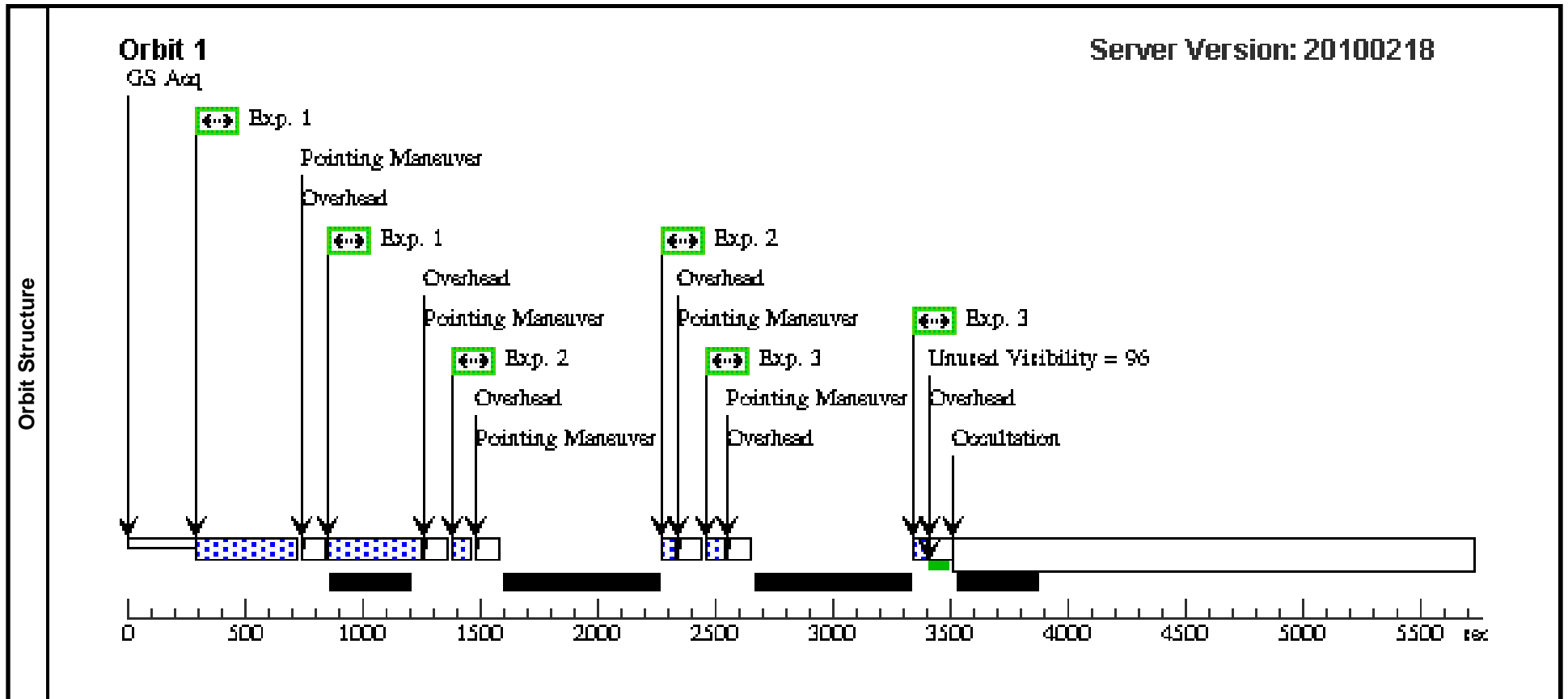
<b>Visit</b>	<b>Proposal 11709, Visit CB, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/IR Special Requirements: AFTER BA BY 9 D TO 12 D; GROUP CB,CA WITHIN 48H Comments: <i>Third visit on low-z SN. WFC/IR observations.</i> To do ~25 days after GRB.										
	<b>Patterns</b>	<b>#</b>	<b>Primary Pattern</b>				<b>Secondary Pattern</b>				<b>Exposures</b>
(4)		Pattern Type=LINE Purpose=DITHER Number Of Points=3 Point Spacing=.4235 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false					(1), (2)			
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>		<b>Fluxes</b>	<b>Miscellaneous</b>				
	(1)	GRB100316D	RA: 07 10 30.7700 (107.6282083d) Dec: -56 15 20.70 (-56.25575d) Equinox: J2000			V=22+/-2	Reference Frame: ICRS				
<b>Exposures</b>	<b>#</b>	<b>Label</b>	<b>Target</b>	<b>Config,Mode,Aperture</b>	<b>Spectral Els.</b>	<b>Opt. Params.</b>	<b>Special Reqs.</b>	<b>Groups</b>	<b>Exp. Time/[Actual Dur.]</b>		<b>Orbit</b>
	1	WFC/F125 W/3	(1) GRB100316D	WFC3/IR, MULTIACCUM, IR	F125W	NSAMP=15; SAMP-SEQ=SPAR S10		Pattern 4, Exps 1-1 (4)	[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]	
2	WFC/F160 W/3	(1) GRB100316D	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=15; SAMP-SEQ=SPAR S10		Pattern 4, Exps 2-2 (4)	[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]		



Proposal 11709 - Visit CB - Stretching the diversity of cosmic explosions: The supernovae of gamma-ray bursts

Mon Mar 22 01:02:15 GMT 2010

Visit	<b>Proposal 11709, Visit DA, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS Special Requirements: AFTER CA BY 22 D TO 36 D Comments: <i>Fourth visit on low-z SN. WFC/UVIS observations.</i> To do ~50 days after GRB.									
	Patterns	#	Primary Pattern				Secondary Pattern			Exposures
		(6)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false						(1), (2), (3)
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections		Fluxes	Miscellaneous			
	(1)	GRB100316D	RA: 07 10 30.7700 (107.6282083d) Dec: -56 15 20.70 (-56.25575d) Equinox: J2000			V=22+/-2	Reference Frame: ICRS			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	WFC3/F336 W	(1) GRB100316D	WFC3/UVIS, ACCUM, UVIS1	F336W	CR-SPLIT=NO		Pattern 6, Exps 1-1 (6)	400 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	2	WFC3/F555 W	(1) GRB100316D	WFC3/UVIS, ACCUM, UVIS1	F555W	CR-SPLIT=NO		Pattern 6, Exps 2-2 (6)	60 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	3	WFC3/F814 W	(1) GRB100316D	WFC3/UVIS, ACCUM, UVIS1	F814W	CR-SPLIT=NO		Pattern 6, Exps 3-3 (6)	60 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]



Proposal 11709 - Visit EA - Stretching the diversity of cosmic explosions: The supernovae of gamma-ray bursts

Mon Mar 22 01:02:15 GMT 2010

Visit	<b>Proposal 11709, Visit EA, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS Special Requirements: AFTER DA BY 90 D TO 110 D Comments: <i>Fifth visit on low-z SN. WFC/UVIS observations. To do ~150 days after GRB.</i>									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
		(6)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(2)				
	(7)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	GRB100316D	RA: 07 10 30.7700 (107.6282083d) Dec: -56 15 20.70 (-56.25575d) Equinox: J2000		V=22+/-2	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	WFC3/F555 W	(1) GRB100316D	WFC3/UVIS, ACCUM, UVIS1	F555W	CR-SPLIT=NO			Pattern 7, Exps 1-1 (7)	150 Secs [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]
	2	WFC3/F814	(1) GRB100316D	WFC3/UVIS, ACCUM, UVIS1	F814W	CR-SPLIT=NO		Pattern 6, Exps 2-2 (6)	200 Secs [=>(Pattern 1)] [=>(Pattern 2)]	[1]

