



17846 - Tripling the sample of late-time Type Ia supernovae

Cycle: 32, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

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Dr. Yi Yang (CoI)	Tsinghua University
Dr. Huei Sears (CoI)	Rutgers the State University of New Jersey

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) SN2021J	WFC3/UVIS	1	14-May-2025 12:01:01.0	yes
02	(2) SN2021HIZ	WFC3/UVIS	1	14-May-2025 12:01:01.0	yes
03	(3) SN2021HPR	WFC3/UVIS	1	14-May-2025 12:01:01.0	yes
04	(5) SN2021PFS	WFC3/UVIS	1	14-May-2025 12:01:02.0	yes
05	(7) SN2021RHU	WFC3/UVIS	1	14-May-2025 12:01:02.0	yes
06	(8) SN2021SMJ	WFC3/UVIS	1	14-May-2025 12:01:02.0	yes
07	(9) SN2021TKM	WFC3/UVIS	1	14-May-2025 12:01:02.0	yes
08	(11) SN2021XJU	WFC3/UVIS	1	14-May-2025 12:01:03.0	yes
09	(12) SN2021AEFX	WFC3/UVIS	1	14-May-2025 12:01:03.0	yes
10	(12) SN2021AEFX	WFC3/UVIS	1	14-May-2025 12:01:03.0	yes
11	(3) SN2021HPR	WFC3/UVIS	1	14-May-2025 12:01:04.0	yes

11 Total Orbits Used

ABSTRACT

Type Ia supernovae (SNe Ia) have long been used as standard candles to measure extragalactic distances and cosmological parameters. SNe Ia are portrayed as a homogeneous class, but there are actually several subtypes. Even the "normal" SNe Ia used for cosmology may not be homogeneous. Recently, the optical light curves of SNe Ia have been shown to slow down, relative to their earlier decline rate, at >800 days after explosion. Moreover, more luminous SNe Ia may slow down faster than less luminous objects. This correlation, which recalls the peak-light stretch-luminosity relation used to standardize SNe Ia, also hints at the existence of several production channels for normal SNe Ia, as no single explosion model can produce the full range of late-time light curves. But this new correlation is based on just 6 objects. We ask for 67 WFC3/UVIS orbits (with the F438W, F555W, and F814W filters) spread over Cycles 30-32 to observe 12 SNe Ia when they are 600-1200 days old. By tripling the sample of late-time SNe Ia, we will prove the existence of the new stretch-luminosity correlation at a significance of >5-sigma. The impact on SN cosmology will be twofold. First, a new stretch-luminosity correlation could further standardize SNe Ia and reduce systematic uncertainties. Second, strong evidence for the existence of multiple production channels for normal SNe Ia would force cosmologists to revisit their use of SNe Ia as a monolithic class. This experiment is time critical. Every year, on average, <5 SNe Ia can be used for this experiment. We are lucky to have 12 targets to work with this year; this chance may not come again during HST's remaining lifetime.

OBSERVING DESCRIPTION

In this program, we will observe the late-time decline of 12 Type Ia supernovae at late times ($600 < t < 1200$ days after explosion). Each target will be visited at least 5 times. Some targets will be visited a 6th time, long after they have faded below the detection limit of our observations, to obtain template images for subtractions. Each visit will be 1 orbit long and will always include the F555W filter. The first two visits, while the targets are brightest, will also include the F438W and F625W filters, respectively. We will continue to use these additional filters in subsequent visits so long as the targets are bright enough. We will download and reduce the data for each visit immediately after they are taken to determine whether the targets are still bright enough or whether we need to drop the additional filters and devote the next orbits wholly to F555W. The cadence of our observations (100-150) days is long enough that we will have enough time to alter our phase II proposal in time for the next set of observations for any specific target.

To ensure high-quality images for PSF-fitting photometry, we will use the WFC3-UVIS-3PT-LINE dither pattern. This means that, to fit in two filters, we will sometimes need to use a smaller field-of-view. Hence, we alternate between a full UVIS field of view (using UVIS, UVIS1 or UVIS2 to cover as much of the host galaxy as possible, depending on the target) and the UVIS2-C1K1C-SUB aperture. Once a given filter has been imaged once with the full aperture, we switch to the smaller one. F555W is an exception, as future visits will be devoted wholly to it, at which point we will switch from the smaller aperture to a full one.

The timing of our observations is important, as we want to catch our targets at specific phases. To that end, we use BETWEEN timing constraints for each visit. Where possible, we use a ~10-day window for scheduleability.

This is a multi-cycle proposal, with 27 orbits in the first cycle, 30 in the second, and 10 in the last.

NOTES FOR GO-17846

In this final cycle, most of the targets have already been observed five times, as required. For some targets, which are either faint or positioned in the inner parts of their host galaxies, we will obtain F555W templates that will then be subtracted from the previous observations. The one exception is SN 2021aefx, which still needs to be visited twice. Due to the transition to 1-gyro operations and the increasing number of failed visits, the templates are not scheduled at the very end of the cycle but midway through it, allowing for a second chance at visiting each target in case of a failed observation.

Proposal 17846 - SN 2021J - template - 280 days after last visit (01) - Tripling the sample of late-time Type Ia supernovae

Wed May 14 16:01:04 GMT 2025

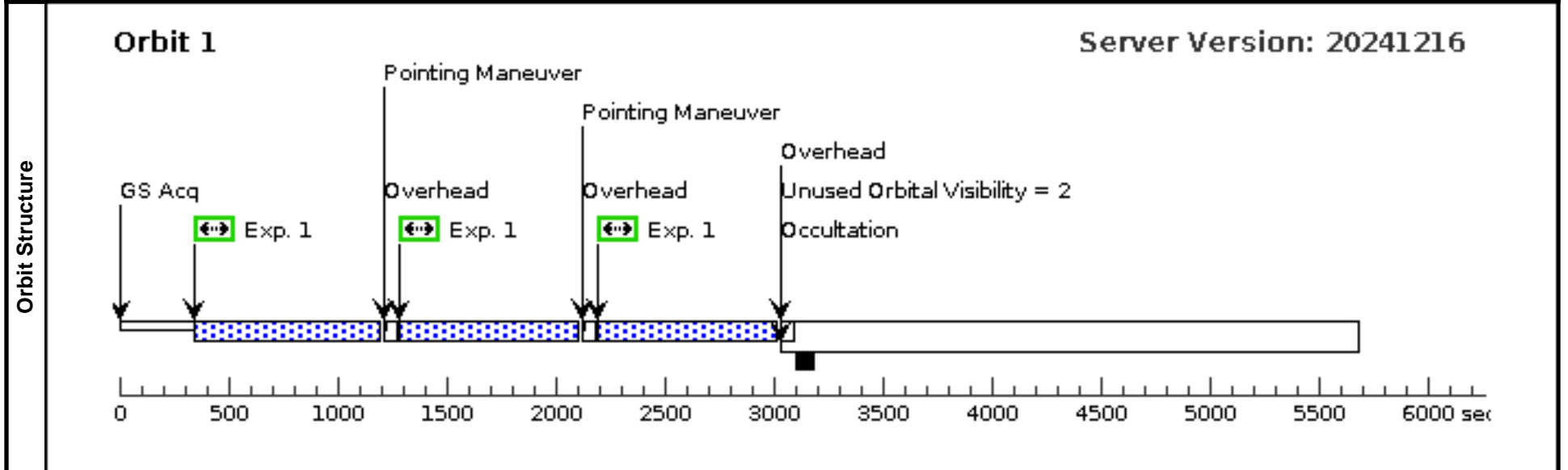
Visit	Proposal 17846, SN 2021J - template - 280 days after last visit (01), completed		
	Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: BETWEEN 18-FEB-2025:00:00:00 AND 28-FEB-2025:00:00:00		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	SN2021J	RA: 12 26 27.0100 (186.6125417d) Dec: +31 13 20.57 (31.22238d) Equinox: J2000		V=25+/-1	Reference Frame: ICRS

Comments:
 Category=EXT-STAR
 Description=[SUPERNOVA TYPE IA]

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(1) SN2021J	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F555W				Pattern 1, Exps 1-1 in SN 2021J - template - 280 days after last visit (01) (1)	824 Secs (2472 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[1]



Proposal 17846 - SN 2021hiz - template - 115 or 160 days after last visit (02) - Tripling the sample of late-time Type Ia supernovae

Visit	Proposal 17846, SN 2021hiz - template - 115 or 160 days after last visit (02), completed Wed May 14 16:01:04 GMT 2025 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: BETWEEN 06-APR-2025:00:00:00 AND 29-MAY-2025:00:00:00									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
	(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(1)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(2)	SN2021HIZ	RA: 12 25 41.6800 (186.4236667d) Dec: +07 13 42.20 (7.22839d) Equinox: J2000		V=25+/-1	Reference Frame: ICRS				
	Comments: Category=EXT-STAR Description=[SUPERNOVA TYPE IA]									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(2) SN2021HIZ		WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F555W			Pattern 1, Exps 1-1 i n SN 2021hiz - templ ate - 115 or 160 days after last visit (02) (1)	805 Secs (2415 Secs)	
								[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]		[1]
Orbit Structure	<div style="display: flex; justify-content: space-between;"> Orbit 1 Server Version: 20241216 </div> <p>Timeline labels: GS Acq, Overhead, Exp. 1, Pointing Maneuver, Overhead, Exp. 1, Pointing Maneuver, Overhead, Exp. 1, Overhead, Occultation, Unused Orbital Visibility = 35</p> <p>X-axis: 0, 500, 1000, 1500, 2000, 2500, 3000, 3500, 4000, 4500, 5000, 5500, 6000 sec</p>									

Proposal 17846 - SN 2021hpr - template - 200 days after last visit (03) - Tripling the sample of late-time Type Ia supernovae

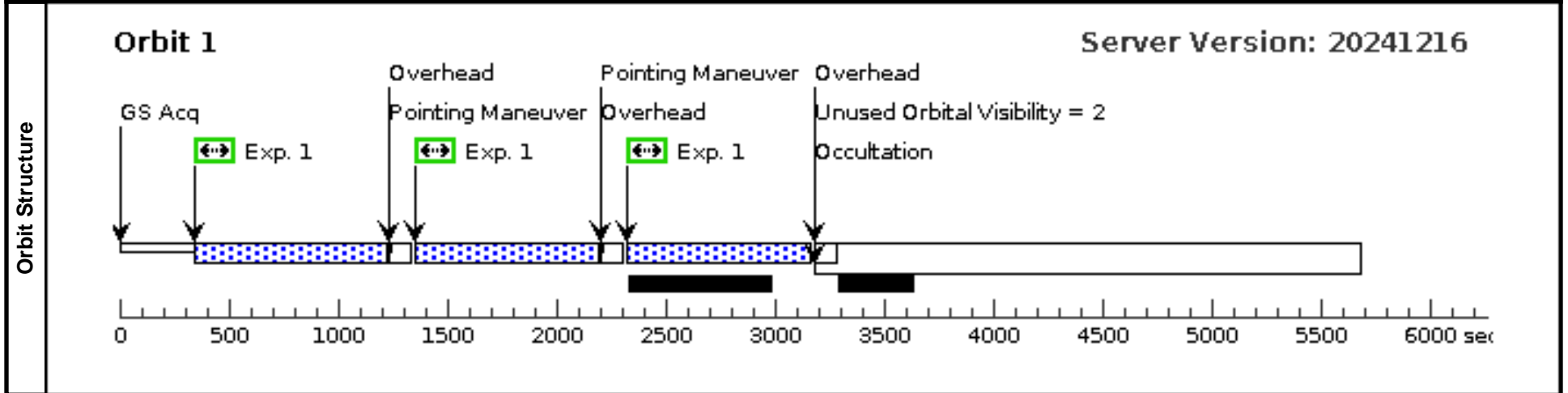
Wed May 14 16:01:04 GMT 2025

Visit	Proposal 17846, SN 2021hpr - template - 200 days after last visit (03), failed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: BETWEEN 11-MAY-2025:00:00:00 AND 21-MAY-2025:00:00:00		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(1)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(3)	SN2021HPR	RA: 10 16 38.6800 (154.1611667d) Dec: +73 24 1.80 (73.40050d) Equinox: J2000		V=25+/-1	Reference Frame: ICRS
	<i>Comments:</i> Category=EXT-STAR Description=[SUPERNOVA TYPE IA]					

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(3) SN2021HPR	WFC3/UVIS, ACCUM, UVIS1	F555W			Pattern 1, Exps 1-1 i n SN 2021hpr - temp late - 200 days after l ast visit (03) (1)	846 Secs (2538 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[1]



Proposal 17846 - SN 2021pfs - template - 104 days after last visit (04) - Tripling the sample of late-time Type Ia supernovae

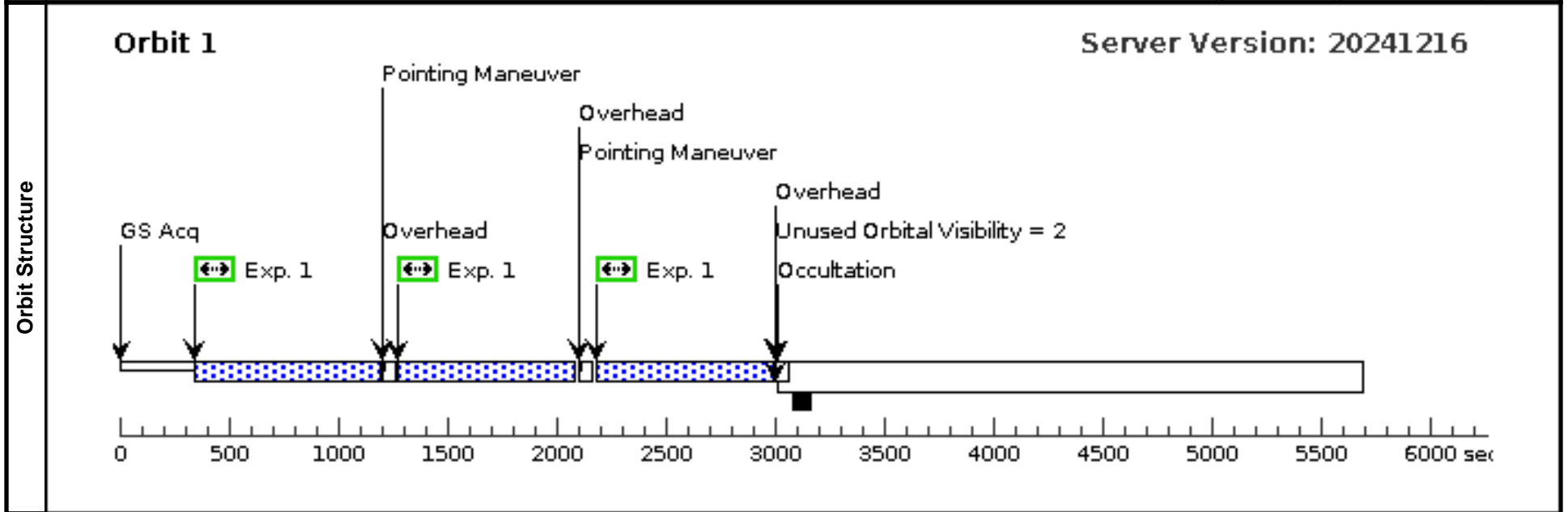
Wed May 14 16:01:04 GMT 2025

Visit	Proposal 17846, SN 2021pfs - template - 104 days after last visit (04), completed		
	Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: BETWEEN 05-APR-2025:00:00:00 AND 15-APR-2025:00:00:00		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false	(1)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(5)	SN2021PFS	RA: 14 03 23.5900 (210.8482917d) Dec: -06 01 53.80 (-6.03161d) Equinox: J2000		V=25+/-1	Reference Frame: ICRS
	<i>Comments:</i> Category=EXT-STAR Description=[SUPERNOVA TYPE IA]					

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(5) SN2021PFS	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F555W			Pattern 1, Exps 1-1 in SN 2021pfs - template - 104 days after last visit (04) (1)	816 Secs (2448 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[1]



Proposal 17846 - SN 2021rhu - template - 276 days after last visit (05) - Tripling the sample of late-time Type Ia supernovae

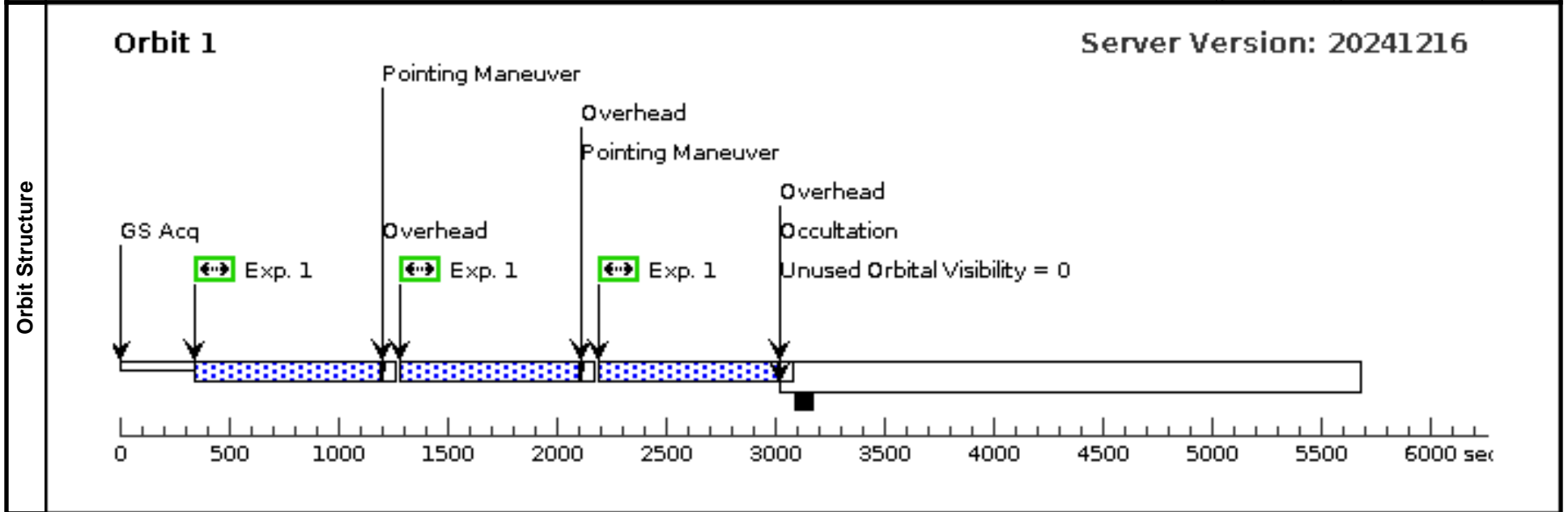
Wed May 14 16:01:04 GMT 2025

Visit	Proposal 17846, SN 2021rhu - template - 276 days after last visit (05), implementation		
	Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: BETWEEN 01-JUL-2025:00:00:00 AND 11-JUL-2025:00:00:00		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false	(1)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(7)	SN2021RHU	RA: 00 03 15.4300 (.8142917d) Dec: +16 08 44.50 (16.14569d) Equinox: J2000		V=25+/-1	Reference Frame: ICRS
	<i>Comments:</i> Category=EXT-STAR Description=[SUPERNOVA TYPE IA]					

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(7) SN2021RHU	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F555W			Pattern 1, Exps 1-1 i n SN 2021rhu - temp late - 276 days after l ast visit (05) (1)	821 Secs (2463 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[1]



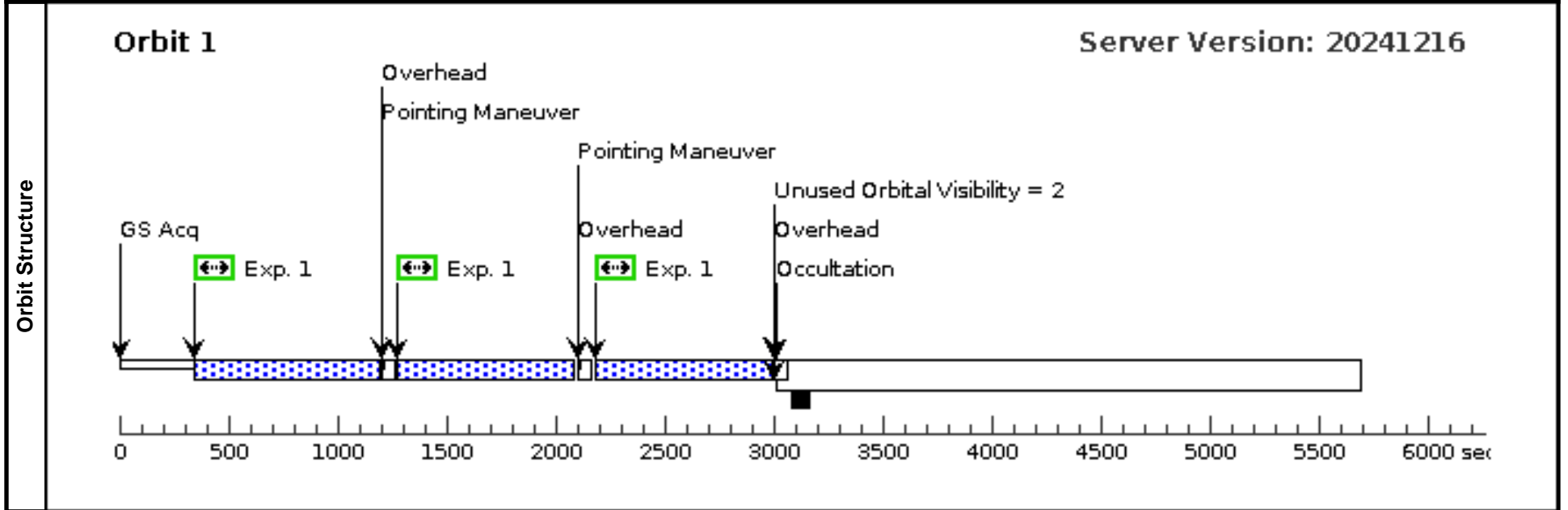
Proposal 17846 - SN 2021smj - template - 115 or 160 days after last visit (06) - Tripling the sample of late-time Type Ia supernovae

Visit	Proposal 17846, SN 2021smj - template - 115 or 160 days after last visit (06), completed Wed May 14 16:01:04 GMT 2025		
	Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: BETWEEN 12-APR-2025:00:00:00 AND 28-MAY-2025:00:00:00		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false	(1)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(8)	SN2021SMJ	RA: 12 26 46.5500 (186.6939583d) Dec: +08 52 57.70 (8.88269d) Equinox: J2000		V=25+/-1	Reference Frame: ICRS
	<i>Comments:</i> Category=EXT-STAR Description=[SUPERNOVA TYPE IA]					

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(8) SN2021SMJ	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F555W			Pattern 1, Exps 1-1 i n SN 2021smj - temp late - 115 or 160 day s after last visit (06) (1)	816 Secs (2448 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[1]



Proposal 17846 - SN 2021tkm - template - 190 days after last visit (07) - Tripling the sample of late-time Type Ia supernovae

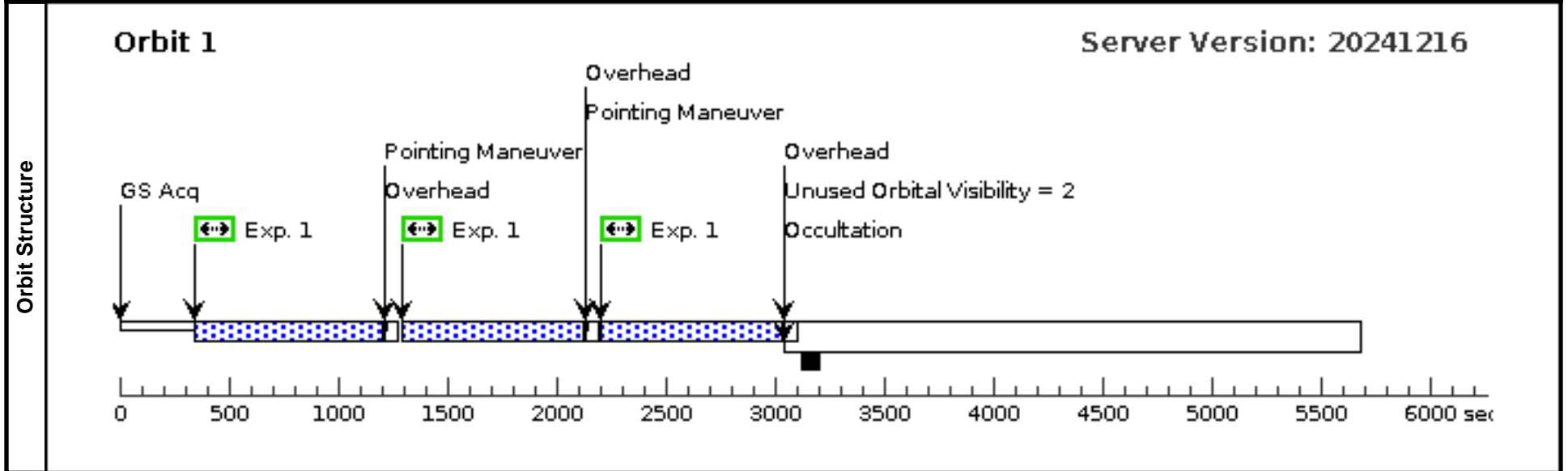
Wed May 14 16:01:04 GMT 2025

Visit	Proposal 17846, SN 2021tkm - template - 190 days after last visit (07), completed		
	Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: BETWEEN 14-MAR-2025:00:00:00 AND 24-MAR-2025:00:00:00		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false	(1)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(9)	SN2021TKM	RA: 14 31 41.5500 (217.9231250d) Dec: -43 24 53.00 (-43.41472d) Equinox: J2000		V=25+/-1	Reference Frame: ICRS
	<i>Comments:</i> Category=EXT-STAR Description=[SUPERNOVA TYPE IA]					

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(9) SN2021TKM	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F555W			Pattern 1, Exps 1-1 i n SN 2021tkm - tem plate - 190 days after last visit (07) (1)	829 Secs (2487 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]



Proposal 17846 - SN 2021xju - template - 240 days after last visit (08) - Tripling the sample of late-time Type Ia supernovae

Visit	Proposal 17846, SN 2021xju - template - 240 days after last visit (08), completed Wed May 14 16:01:04 GMT 2025									
	Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: BETWEEN 24-APR-2025:00:00:00 AND 03-MAY-2025:00:00:00									
Patterns	#	Primary Pattern	Secondary Pattern		Exposures					
	(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(1)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(11)	SN2021XJU	RA: 20 22 30.9600 (305.6290000d) Dec: -53 16 44.20 (-53.27894d) Equinox: J2000		V=25	Reference Frame: ICRS				
Comments: Category=EXT-STAR Description=[SUPERNOVA TYPE IA]										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(11) SN2021XJU		WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F555W			Pattern 1, Exps 1-1 i n SN 2021xju - temp late - 240 days after l ast visit (08) (1)	839 Secs (2517 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[1]
Orbit Structure	Orbit 1 Server Version: 20241216									
	<p>The diagram illustrates the orbit structure for Orbit 1 over a 6000-second period. Key events include:</p> <ul style="list-style-type: none"> GS Acq: Ground Station Acquisition at approximately 200 seconds. Exp. 1: Three exposures, each lasting 839 seconds, occurring at approximately 400, 1300, and 2200 seconds. Pointing Maneuver Overhead: Periods between exposures where the telescope is repositioned. Occultation: A period where the target is obscured by the Earth's limb, starting at approximately 3100 seconds. Unused Orbital Visibility = 1: A period of 1 second where the target is visible but not used for observations. 									

Proposal 17846 - SN 2021aefx - 1050 days (09) - Tripling the sample of late-time Type Ia supernovae

Wed May 14 16:01:04 GMT 2025

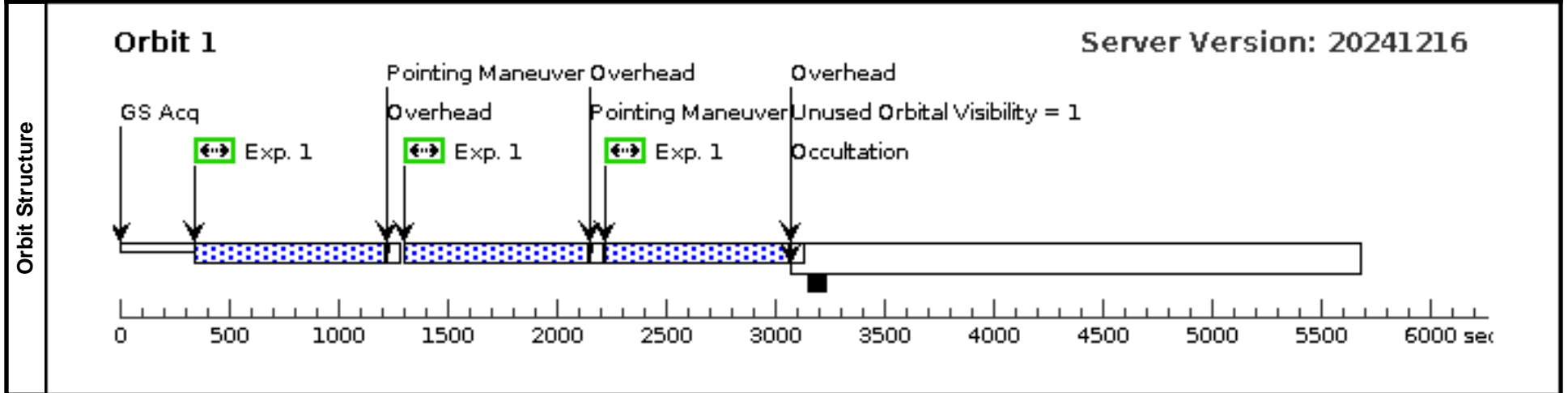
Visit	Proposal 17846, SN 2021aefx - 1050 days (09), completed		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: WFC3/UVIS		
	Special Requirements: BETWEEN 10-OCT-2024:00:00:00 AND 20-OCT-2024:00:00:00		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(12)	SN2021AEFX	RA: 04 19 53.3400 (64.9722500d) Dec: -54 56 52.60 (-54.94794d) Equinox: J2000		V=25+/-1	Reference Frame: ICRS

Comments:
 Category=EXT-STAR
 Description=[SUPERNOVA TYPE IA]

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(12) SN2021AEFX	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F555W				Pattern 1, Exps 1-1 in SN 2021aefx - 1050 days (09) (1)	839 Secs (2517 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]



Proposal 17846 - SN 2021aefx - 1200 days (10) - Tripling the sample of late-time Type Ia supernovae

Wed May 14 16:01:04 GMT 2025

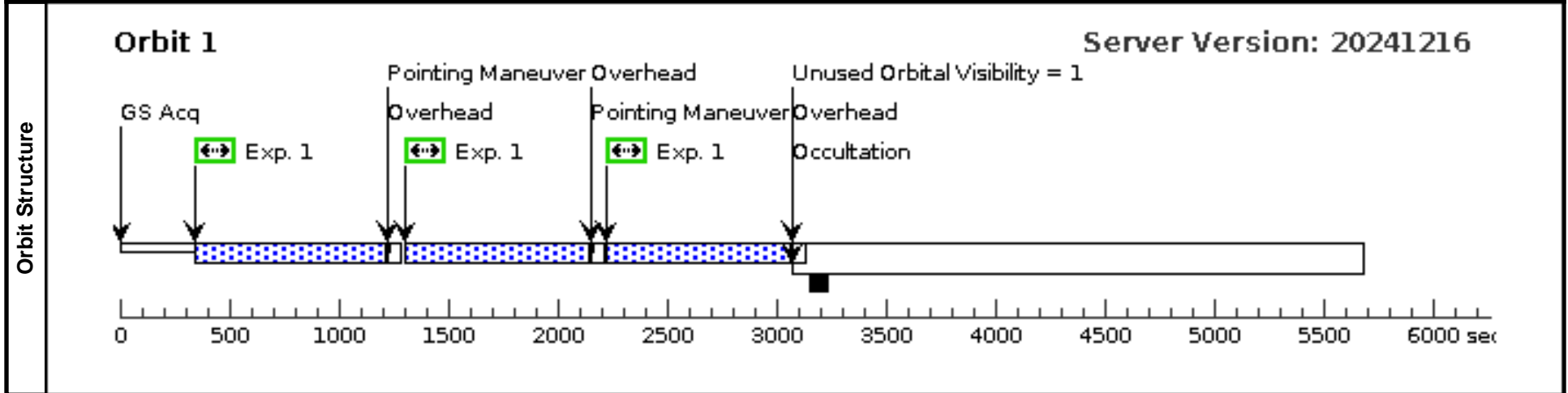
Visit	Proposal 17846, SN 2021aefx - 1200 days (10), completed		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: WFC3/UVIS		
	Special Requirements: BETWEEN 24-APR-2025:00:00:00 AND 03-MAY-2025:00:00:00		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(12)	SN2021AEFX	RA: 04 19 53.3400 (64.9722500d) Dec: -54 56 52.60 (-54.94794d) Equinox: J2000			V=25+/-1

Comments:
 Category=EXT-STAR
 Description=[SUPERNOVA TYPE IA]

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(12) SN2021AEFX	WFC3/UVIS, ACCUM, UVIS2-C1K1C-SUB	F555W				Pattern 1, Exps 1-1 i n SN 2021aefx - 120 0 days (10) (1)	839 Secs (2517 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]



Proposal 17846 - SN 2021hpr - template - redo (11) - Tripling the sample of late-time Type Ia supernovae

Wed May 14 16:01:04 GMT 2025

Visit	Proposal 17846, SN 2021hpr - template - redo (11)		
	Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: BETWEEN 18-AUG-2025:00:00:00 AND 25-AUG-2025:00:00:00 <i>Comments: This is a redo of the failed visit 03, authorized through HOPR 93234.</i>		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=WFC3-UVIS-DITHER- LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(1)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(3)	SN2021HPR	RA: 10 16 38.6800 (154.1611667d) Dec: +73 24 1.80 (73.40050d) Equinox: J2000		V=25+/-1	Reference Frame: ICRS
	<i>Comments: Category=EXT-STAR Description=[SUPERNOVA TYPE IA]</i>					

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(3) SN2021HPR	WFC3/UVIS, ACCUM, UVIS1	F555W			Pattern 1, Exps 1-1 i n SN 2021hpr - temp late - redo (11) (1)	846 Secs (2538 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[1]

