



14719 - The detailed properties of star-forming regions at high redshift: a matched-resolution HST-Halpha-ALMA study

Cycle: 24, 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) SHIZELS-7	WFC3/UVIS	1	20-Jun-2017 21:01:47.0	yes
02	(1) SHIZELS-7	WFC3/IR	1	20-Jun-2017 21:01:48.0	yes
03	(2) SHIZELS-8	WFC3/UVIS	1	20-Jun-2017 21:01:49.0	yes
04	(2) SHIZELS-8	WFC3/IR	1	20-Jun-2017 21:01:50.0	yes
05	(3) SHIZELS-9	WFC3/UVIS	1	20-Jun-2017 21:01:50.0	yes
06	(3) SHIZELS-9	WFC3/IR	1	20-Jun-2017 21:01:51.0	yes
07	(4) SHIZELS-10	WFC3/UVIS	1	20-Jun-2017 21:01:51.0	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>
08	(4) SHIZELS-10	WFC3/IR	1	20-Jun-2017 21:01:52.0	yes
09	(5) SHIZELS-11	WFC3/UVIS	1	20-Jun-2017 21:01:53.0	yes
10	(5) SHIZELS-11	WFC3/IR	1	20-Jun-2017 21:01:53.0	yes
11	(6) NIFS-HIZELS-1	WFC3/UVIS	1	20-Jun-2017 21:01:54.0	yes
12	(6) NIFS-HIZELS-1	WFC3/IR	1	20-Jun-2017 21:01:54.0	yes
13	(7) NIFS-HIZELS-2	WFC3/UVIS	1	20-Jun-2017 21:01:55.0	yes
14	(7) NIFS-HIZELS-2	WFC3/IR	1	20-Jun-2017 21:01:56.0	yes
15	(8) NIFS-HIZELS-3	WFC3/UVIS	1	20-Jun-2017 21:01:56.0	yes
16	(8) NIFS-HIZELS-3	WFC3/IR	1	20-Jun-2017 21:01:57.0	yes
17	(9) SHIZELS-14	WFC3/UVIS	1	20-Jun-2017 21:01:57.0	yes
18	(9) SHIZELS-14	WFC3/IR	1	20-Jun-2017 21:01:58.0	yes
52	(1) SHIZELS-7	WFC3/IR	1	20-Jun-2017 21:01:58.0	yes

19 Total Orbits Used

ABSTRACT

Star-formation in high redshift galaxies takes place in very different conditions to those locally: high-redshift star-forming galaxies are dominated by gas-rich ($f_{\text{gas}} \sim 20\text{-}80\%$) turbulent disks, have a highly pressured interstellar medium, and contain star-forming complexes orders of magnitude larger than those nearby. To understand quantitative the physical conditions and processes in these galaxies requires spatially-resolved studies of their properties and dynamics. We have been addressing this using adaptive-optics-assisted integral field spectroscopy of the H-alpha line emission of 'typical' galaxies at $z=1.47$ and 2.23 , coupled with ALMA imaging of the thermal dust emission at matched 0.1-arcsec resolution. Here we propose to obtain two-filter HST images of 9 of these galaxies to delineate the old and young stellar populations on the same kpc-scales. Using these data we will: (i) measure spatially-resolved dust attenuation by accurately mapping the H-alpha to ultraviolet star-formation rate ratio across the galaxies; (ii) derive corrected star-formation rates, quantify the properties of the star-forming clumps, and investigate their scaling relations; (iii) critically test numerical simulations of the properties and lifetimes of these clumps; (iv) determine the morphological properties of the galaxies: evidence for mergers, disk scale-lengths, Sersic indices; (v) provide the first spatially-resolved comparison of the three classic star-formation tracers (UV, H-alpha, far-IR) at high redshift. This matched-resolution HST-Halpha-ALMA dataset will be a uniquely powerful resource for understanding the physical conditions within high-redshift star-forming galaxies.

OBSERVING DESCRIPTION

We will observe the 9 targets from our HiZELS-SINFONI/NIFS-ALMA sample at $z=1.47$ and $z=2.23$, using the WFC3/UVIS F606W filter and the WFC3/IR F140W filter.

HiZELS is a wide-field near-infrared narrow-band survey which has selected H-alpha emitting galaxies in four narrow redshift slices, over large sky areas. The large HiZELS samples have allowed the selection of galaxies close enough to bright stars to enable adaptive-optics-assisted integral field spectroscopy of the H-alpha emission with VLT-SINFONI and Gemini-NIFS at ~ 0.1 arcsec resolution. For the 9 targets in this proposal we also have ALMA time to study their dust continuum emission, also at 0.1 arcsec resolution. These HST observations will obtain matched resolution observations of the rest-frame near-UV emission (~ 2400 Ang and ~ 1900 Ang using the F606W filter at $z=1.47$ and $z=2.23$ respectively) and optical (~ 5500 Ang and 4350 Ang using the F140W filter), spanning the 4000 Ang break, and so tracing the young and old stellar populations. Importantly, at both redshifts these filters cover line-free regions of the spectrum.

The targets all have AB magnitudes in the range $23.0 < F606W < 24.0$ and $20.5 < F140W < 22.0$. The angular sizes of the galaxies are typically 1-1.5 arcsec. We require accurate morphological information, and therefore target an integrated signal-to-noise ratio of at least ~ 50 , and ideally > 100 , within a 1.5 arcsec diameter aperture. This is achievable with one orbit integrations through each filter.

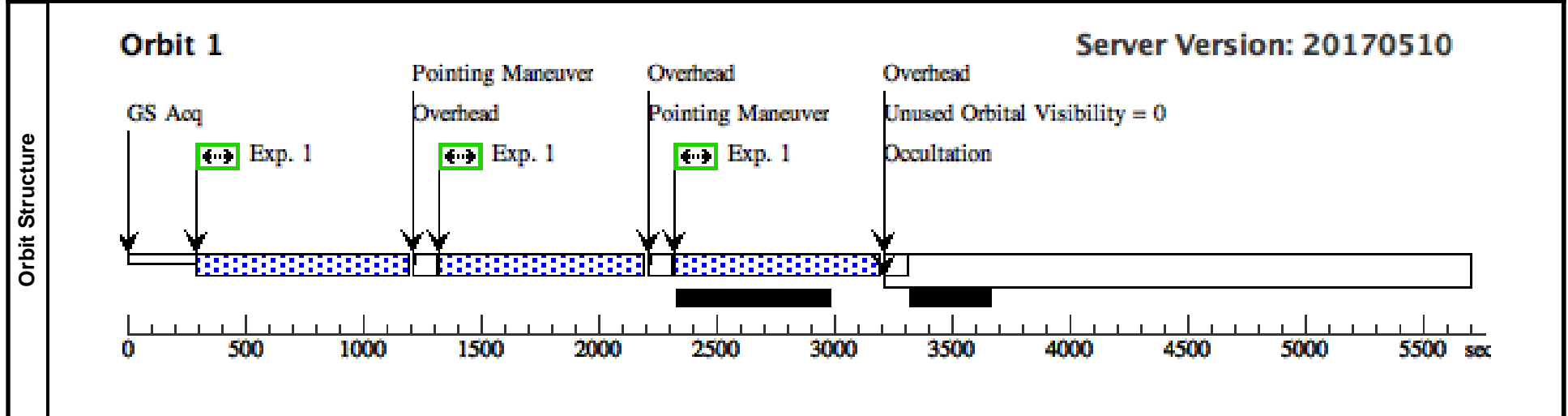
We will split each orbit into a 3-point dither pattern in the UVIS channel, as this offers the best compromise between maximising sensitivity and sub-sampling the PSF. In the IR channel, angular resolution is of higher priority than sensitivity, and so a 4-point dither pattern will be adopted to fully recover the PSF.

Visit	Proposal 14719, SHiZELS7-UV (01), scheduling		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: WFC3/UVIS		
	Special Requirements: (none)		

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
	(1)	SHiZELS-7	RA: 02 17 0.4000 (34.2516667d) Dec: -05 01 50.80 (-5.03078d) Equinox: J2000	Redshift: 1.47	V=23.3+/-0.1 H=21.7	Reference Frame: ICRS
		<i>Comments: Extended=YES</i>				

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	SHiZELS7-UV	(1) SHiZELS-7	WFC3/UVIS, ACCUM, UVIS	F606W			Pattern 1, Exps 1-1 in SHiZELS7-UV (01) (1)	850 Secs (2616 Secs) [==>872.0 Secs (Pattern 1)] [==>872.0 Secs (Pattern 2)] [==>872.0 Secs (Pattern 3)]	[1]



Proposal 14719 - SHiZELS7-IR (02) - The detailed properties of star-forming regions at high redshift: a matched-resolution HST-Halph...

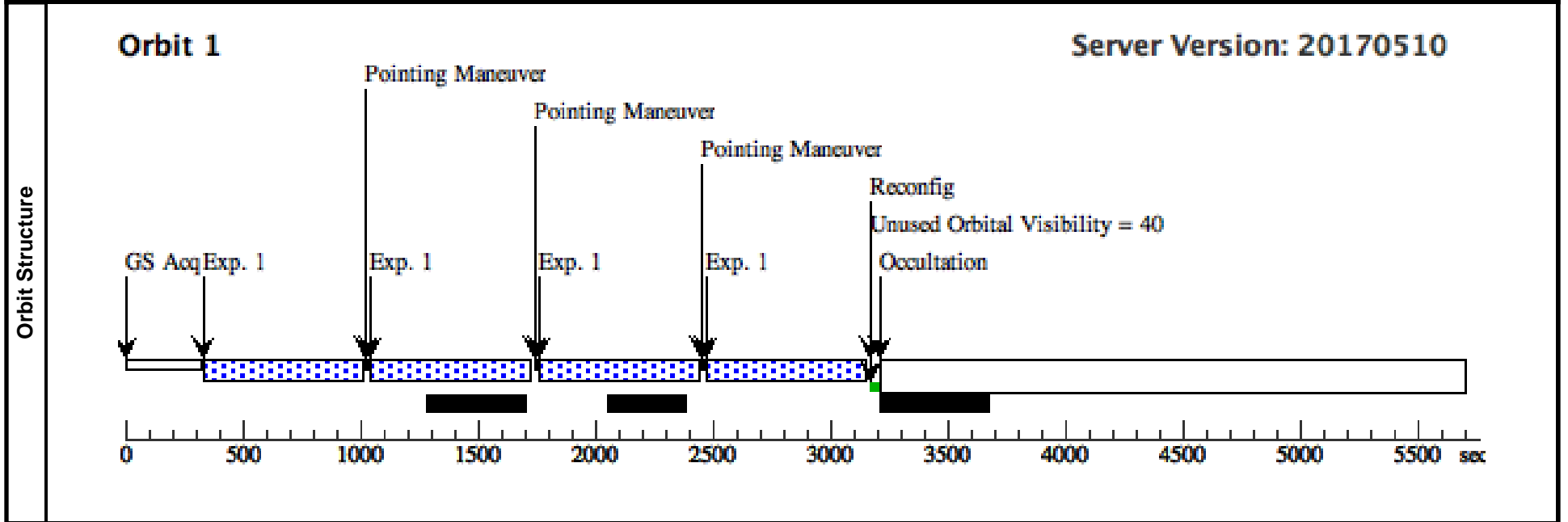
Wed Jun 21 01:02:00 GMT 2017

Visit	Proposal 14719, SHiZELS7-IR (02), scheduled Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(2)	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)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	SHiZELS-7	RA: 02 17 0.4000 (34.2516667d) Dec: -05 01 50.80 (-5.03078d) Equinox: J2000	Redshift: 1.47	V=23.3+/-0.1 H=21.7	Reference Frame: ICRS
	Alt Name1: HIZELS-UDS-NB921-DTC-S12-192874 Alt Name2: HIZELS-UDS-NBH-DTC-S12-5776 Comments: Extended=YES					

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	SHiZELS7-I R	(1) SHiZELS-7	WFC3/IR, MULTIACCUM, IR	F140W	NSAMP=14; SAMP-SEQ=SPAR S50		Pattern 2, Exps 1-1 in SHiZELS7-IR (02) (2)	652.938154 Secs (2611.753 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]



Proposal 14719 - SHiZELS8-UV (03) - The detailed properties of star-forming regions at high redshift: a matched-resolution HST-Halp...

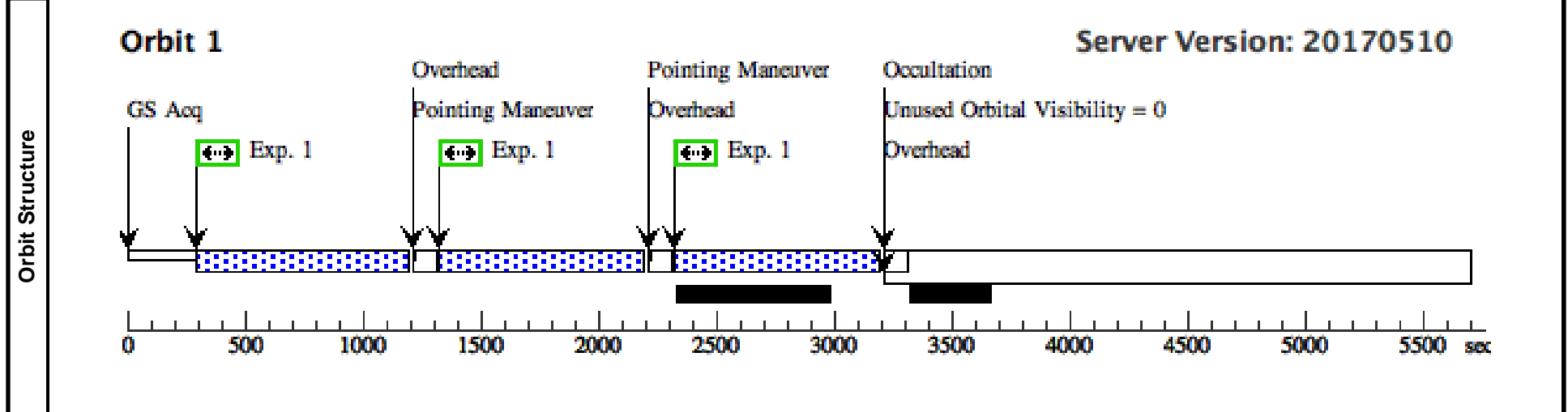
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Visit	Proposal 14719, SHiZELS8-UV (03), completed		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: WFC3/UVIS		
	Special Requirements: (none)		

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)	SHiZELS-8	RA: 02 18 21.0000 (34.5875000d)	Redshift: 1.46	V=23.3+/-0.1 H=21.4	Reference Frame: ICRS
		Alt Name1: HIZELS-UDS-NB921-DTC-S12-134582	Dec: -05 19 7.80 (-5.31883d)			
		Alt Name2: HIZELS-UDS-NBH-DTC-S12-16305	Equinox: J2000			
	<i>Comments: Extended=YES</i>					

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	SHiZELS8-UV	(2) SHiZELS-8	WFC3/UVIS, ACCUM, UVIS	F606W			Pattern 1, Exps 1-1 in SHiZELS8-UV (03) (1)	850 Secs (2616 Secs)	
									[=>872.0 Secs (Pattern 1)]	
									[=>872.0 Secs (Pattern 2)]	
									[=>872.0 Secs (Pattern 3)]	[1]



Proposal 14719 - SHiZELS8-IR (04) - The detailed properties of star-forming regions at high redshift: a matched-resolution HST-Halph...

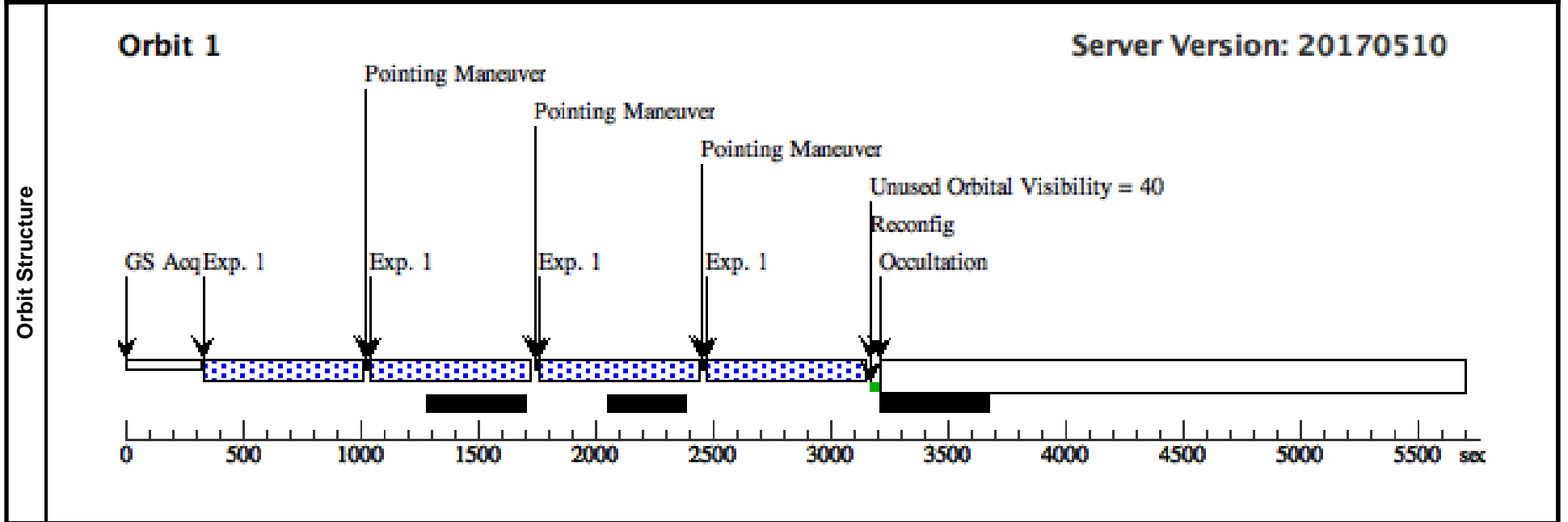
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Visit	Proposal 14719, SHiZELS8-IR (04), completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(2)	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)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(2)	SHiZELS-8	RA: 02 18 21.0000 (34.5875000d) Dec: -05 19 7.80 (-5.31883d) Equinox: J2000	Redshift: 1.46	V=23.3+/-0.1 H=21.4	Reference Frame: ICRS
		Alt Name1: HIZELS-UDS-NB921-DTC-S12-134582 Alt Name2: HIZELS-UDS-NBH-DTC-S12-16305				
		Comments: Extended=YES				

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	SHiZELS8-I R	(2) SHiZELS-8	WFC3/IR, MULTIACCUM, IR	F140W	NSAMP=14; SAMP-SEQ=SPAR S50		Pattern 2, Exps 1-1 in SHiZELS8-IR (04) (2)	652.938154 Secs (2611.753 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]	[1]



Visit	Proposal 14719, SHiZELS9-UV (05), scheduling Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: (none)									
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)	SHiZELS-9	RA: 02 17 13.0000 (34.3041667d) Dec: -04 54 40.70 (-4.91131d) Equinox: J2000	Redshift: 1.47	V=23.0+/-0.1 H=20.9	Reference Frame: ICRS				
<i>Comments: Extended=YES</i>										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	SHiZELS9-UV	(3) SHiZELS-9	WFC3/UVIS, ACCUM, UVIS	F606W		GS ACQ SCENARI O BASE1B3	Pattern 1, Exps 1-1 i n SHiZELS9-UV (05)) (1)	850 Secs (2613 Secs) [=>871.0 Secs (Pattern 1)] [=>871.0 Secs (Pattern 2)] [=>871.0 Secs (Pattern 3)]	[1]
Orbit Structure	<div style="display: flex; justify-content: space-between;"> Orbit 1 Server Version: 20170510 </div> <p>The diagram illustrates the orbit structure over a 5500-second period. Key events include:</p> <ul style="list-style-type: none"> GS Acq: Occurs at the beginning of the orbit. Exp. 1: Three exposures, each lasting 850 seconds, are scheduled at approximately 400, 1400, and 2400 seconds. Overhead/Pointing Maneuver: Three overhead periods are interspersed between the exposures. Occultation: A black bar indicates a period of occultation starting around 2500 seconds and ending around 3500 seconds. Unused Orbital Visibility = 0: A label indicating that the remaining orbital time after the occultation is not used for observations. 									

Proposal 14719 - SHiZELS9-IR (06) - The detailed properties of star-forming regions at high redshift: a matched-resolution HST-Halph...

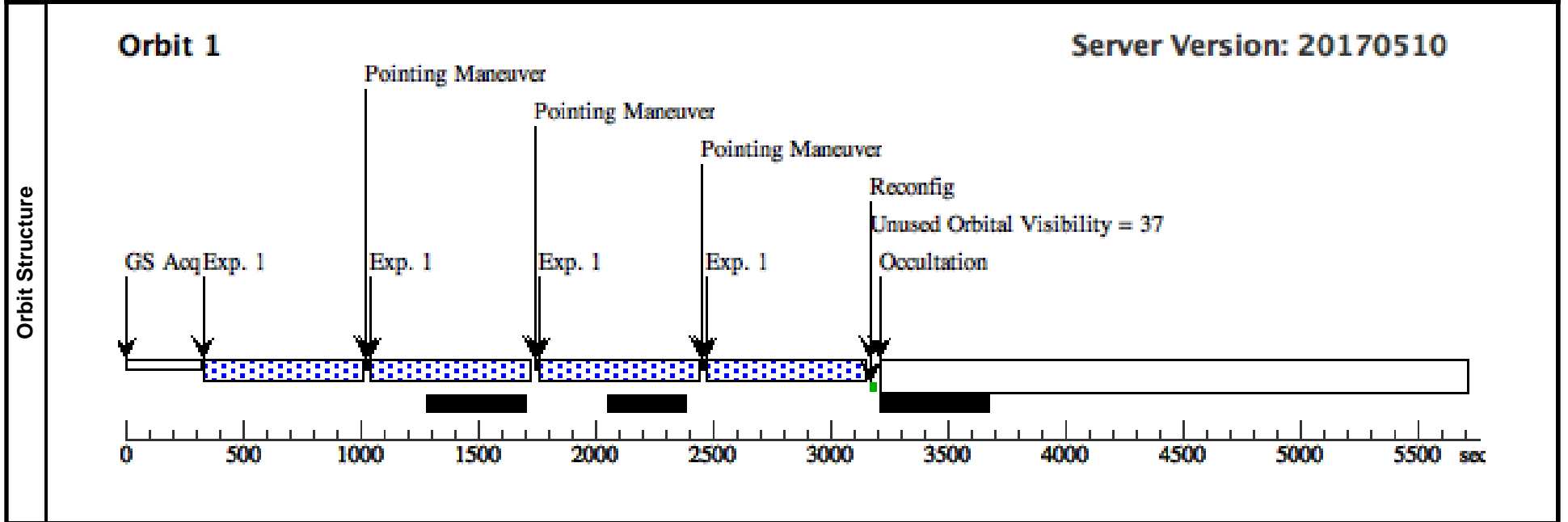
Wed Jun 21 01:02:00 GMT 2017

Visit	Proposal 14719, SHiZELS9-IR (06), scheduling		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: WFC3/IR		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(2)	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)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(3)	SHIZELS-9	RA: 02 17 13.0000 (34.3041667d) Dec: -04 54 40.70 (-4.91131d) Equinox: J2000	Redshift: 1.47	V=23.0+/-0.1 H=20.9	Reference Frame: ICRS
		Alt Name1: HIZELS-UDS-NB921-DTC-S12-38554 Alt Name2: HIZELS-UDS-NBH-DTC-S12-7501				
		Comments: Extended=YES				

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	SHiZELS9-I R	(3) SHIZELS-9	WFC3/IR, MULTIACCUM, IR	F140W	NSAMP=14; SAMP-SEQ=SPAR S50	GS ACQ SCENARI O BASE1B3	Pattern 2, Exps 1-1 i n SHiZELS9-IR (06) (2)	652.938154 Secs (2611.753 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]	[1]

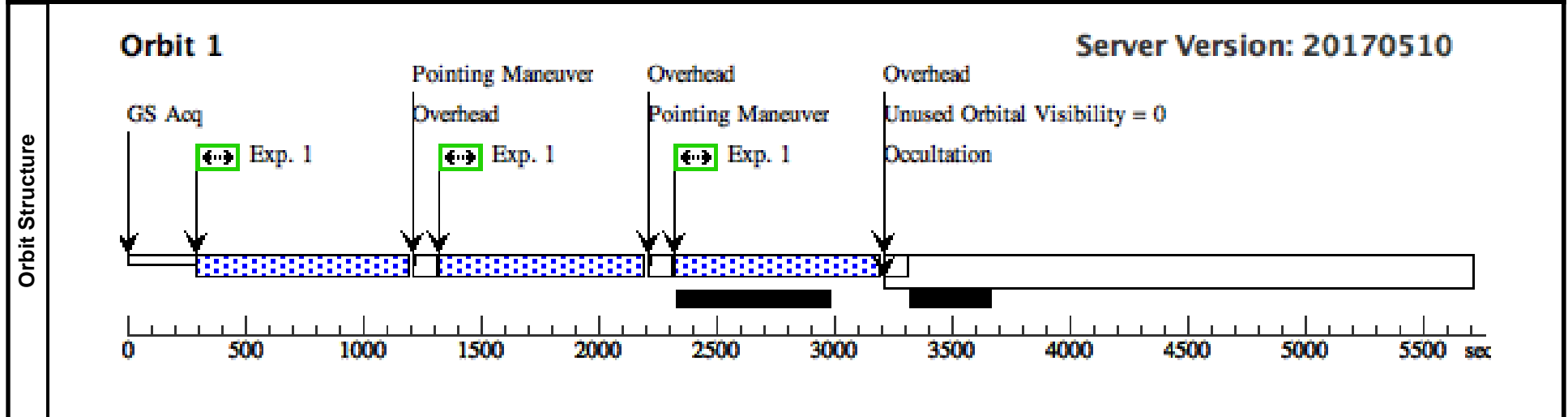


Visit	Proposal 14719, SHiZELS10-UV (07), scheduled		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: WFC3/UVIS		
	Special Requirements: (none)		

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
	(4)	SHiZELS-10	RA: 02 17 39.0000 (34.4125000d) Dec: -04 44 43.10 (-4.74531d) Equinox: J2000	Redshift: 1.47	V=23.1+/-0.1 H=21.7	Reference Frame: ICRS
	<i>Comments: Extended=YES</i>					

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	SHiZELS10-UV	(4) SHiZELS-10	WFC3/UVIS, ACCUM, UVIS	F606W			Pattern 1, Exps 1-1 i n SHiZELS10-UV (0 7) (1)	850 Secs (2613 Secs) [==>871.0 Secs (Pattern 1)] [==>871.0 Secs (Pattern 2)] [==>871.0 Secs (Pattern 3)]	[1]



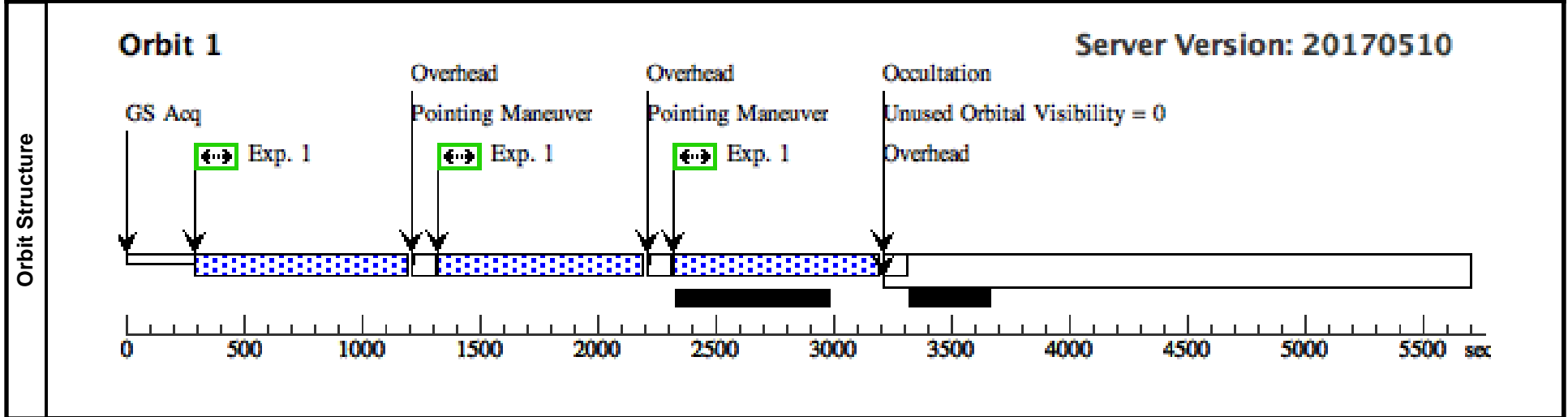
Visit	Proposal 14719, SHiZELS10-IR (08), completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: (none)									
Patterns	#	Primary Pattern	Secondary Pattern	Exposures						
	(2)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(4)	SHIZELS-10	RA: 02 17 39.0000 (34.4125000d) Dec: -04 44 43.10 (-4.74531d) Equinox: J2000	Redshift: 1.47	V=23.1+/-0.1 H=21.7	Reference Frame: ICRS				
<i>Comments: Extended=YES</i>										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	SHiZELS10-IR	(4) SHIZELS-10	WFC3/IR, MULTIACCUM, IR	F140W	NSAMP=14; SAMP-SEQ=SPARS50		Pattern 2, Exps 1-1 in SHiZELS10-IR (08) (2)	652.938154 Secs (2611.753 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]
Orbit Structure	<div style="display: flex; justify-content: space-between;"> Orbit 1 Server Version: 20170510 </div> <p>The diagram shows a timeline from 0 to 5500 seconds. Key events include: GS Acq (0-50s), Exp. 1 (50-100s), Pointing Maneuver (100-1000s), Exp. 1 (1000-1500s), Pointing Maneuver (1500-1750s), Exp. 1 (1750-2000s), Pointing Maneuver (2000-2400s), Exp. 1 (2400-2800s), Pointing Maneuver (2800-3150s), Reconfig (3150-3200s), Occultation (3200-3600s), and Unused Orbital Visibility = 37 (3600-5500s). A blue checkered bar highlights the exposure periods.</p>									

Visit	Proposal 14719, SHiZELS11-UV (09), scheduling		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: WFC3/UVIS		
	Special Requirements: (none)		

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)	SHIZELS-11	RA: 02 18 21.2000 (34.5883333d) Dec: -05 02 48.90 (-5.04692d) Equinox: J2000	Redshift: 1.47	V=23.4+/-0.1 H=20.2	Reference Frame: ICRS
	<i>Comments: Extended=YES</i>					

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	SHIZELS11-UV	(5) SHIZELS-11	WFC3/UVIS, ACCUM, UVIS	F606W		GS ACQ SCENARI O BASE1B3	Pattern 1, Exps 1-1 i n SHiZELS11-UV (0 9) (1)	850 Secs (2616 Secs) [=>872.0 Secs (Pattern 1)] [=>872.0 Secs (Pattern 2)] [=>872.0 Secs (Pattern 3)]	[1]



Visit	Proposal 14719, SHiZELS11-IR (10), scheduling Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: (none)									
Patterns	#	Primary Pattern	Secondary Pattern	Exposures						
	(2)	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)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(5)	SHIZELS-11	RA: 02 18 21.2000 (34.5883333d) Dec: -05 02 48.90 (-5.04692d) Equinox: J2000	Redshift: 1.47	V=23.4+/-0.1 H=20.2	Reference Frame: ICRS				
<i>Comments: Extended=YES</i>										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	SHIZELS11-IR	(5) SHIZELS-11	WFC3/IR, MULTIACCUM, IR	F140W	NSAMP=14; SAMP-SEQ=SPARS50	GS ACQ SCENARI O BASE1B3	Pattern 2, Exps 1-1 in SHiZELS11-IR (10) (2)	652.938154 Secs (2611.753 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]
Orbit Structure	Orbit 1 Server Version: 20170510									
	<p>The diagram illustrates the timeline for Orbit 1, starting at 0 seconds and ending at 5500 seconds. Key events include:</p> <ul style="list-style-type: none"> GS Acq Exp. 1: Occurs between approximately 100 and 400 seconds. Exp. 1: Four exposures occur at approximately 1000, 1700, 2400, and 3100 seconds. Pointing Maneuvers: Three maneuvers occur between exposures, at approximately 1300, 2000, and 2700 seconds. Reconfig: Occurs at approximately 3200 seconds. Occultation: Occurs at approximately 3300 seconds. Unused Orbital Visibility = 40: A period of 40 seconds of unused visibility follows the occultation. 									

Proposal 14719 - NIFS-HIZELS1-UV (11) - The detailed properties of star-forming regions at high redshift: a matched-resolution HST-...

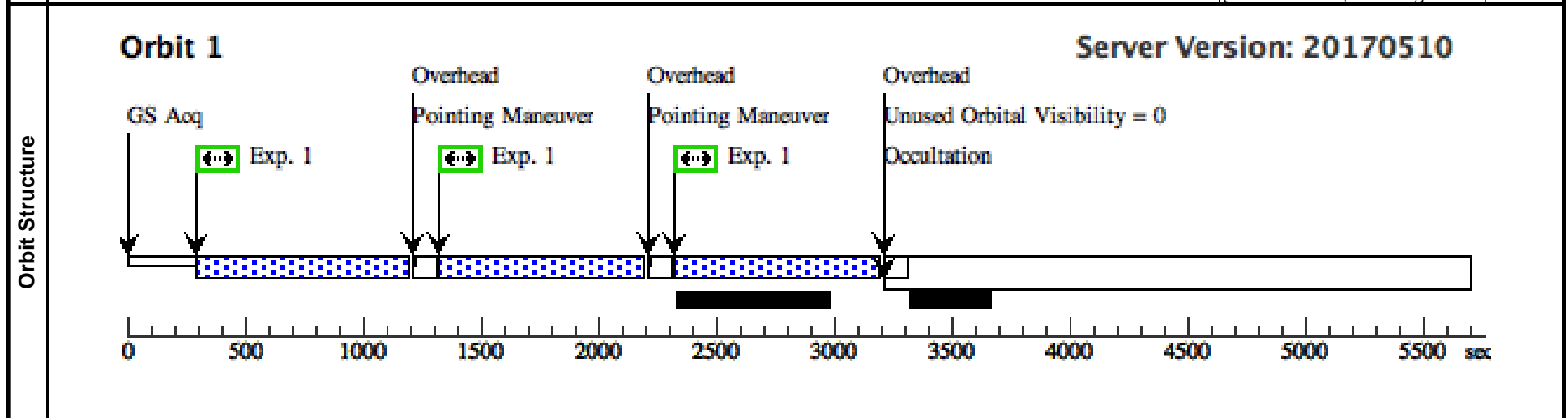
Wed Jun 21 01:02:00 GMT 2017

Visit	Proposal 14719, NIFS-HIZELS1-UV (11), scheduling		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: WFC3/UVIS		
	Special Requirements: (none)		

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
	(6)	NIFS-HIZELS-1	RA: 02 16 45.8900 (34.1912083d) Dec: -05 02 44.70 (-5.04575d) Equinox: J2000	Redshift: 2.23	V=23.6+/-0.1 H=21.5	Reference Frame: ICRS
	<i>Comments: Extended=YES</i>					

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	NIFS-HIZE LS1-UV	(6) NIFS-HIZELS-1	WFC3/UVIS, ACCUM, UVIS	F606W			Pattern 1, Exps 1-1 i n NIFS-HIZELS1-U V (11) (1)	850 Secs (2616 Secs) [=>872.0 Secs (Pattern 1)] [=>872.0 Secs (Pattern 2)] [=>872.0 Secs (Pattern 3)]	[1]

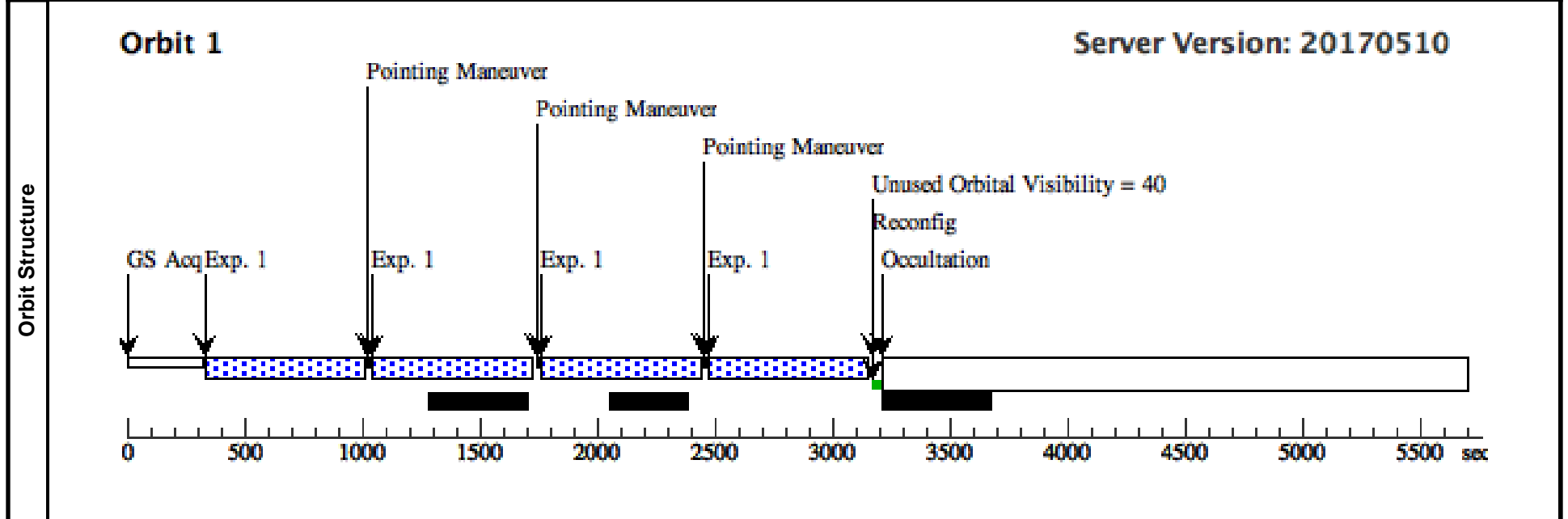


Visit	Proposal 14719, NIFS-HIZELS1-IR (12), completed		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: WFC3/IR		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(2)	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)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(6)	NIFS-HIZELS-1	RA: 02 16 45.8900 (34.1912083d) Dec: -05 02 44.70 (-5.04575d) Equinox: J2000	Redshift: 2.23	V=23.6+/-0.1 H=21.5	Reference Frame: ICRS
	<i>Comments: Extended=YES</i>					

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	NIFS-HIZE LS1-IR	(6) NIFS-HIZELS-1	WFC3/IR, MULTIACCUM, IR	F140W	NSAMP=14; SAMP-SEQ=SPAR S50		Pattern 2, Exps 1-1 in NIFS-HIZELS1-IR (12) (2)	652.938154 Secs (2611.753 Secs)	
									[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]



Proposal 14719 - NIFS-HIZELS2-UV (13) - The detailed properties of star-forming regions at high redshift: a matched-resolution HST-...

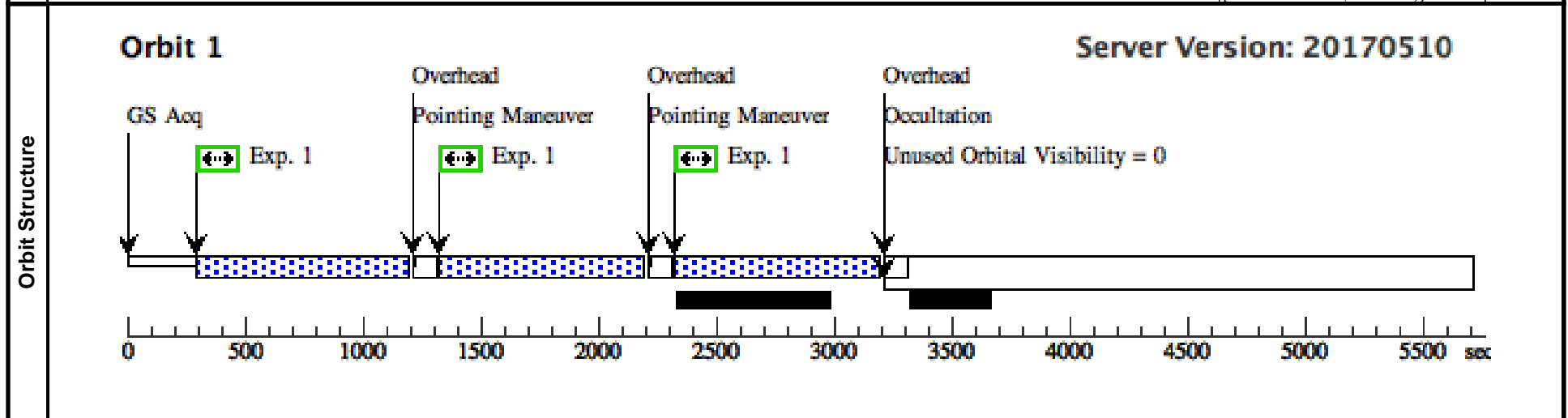
Wed Jun 21 01:02:00 GMT 2017

Visit	Proposal 14719, NIFS-HIZELS2-UV (13), completed		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: WFC3/UVIS		
	Special Requirements: (none)		

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)	NIFS-HIZELS-2	RA: 02 19 25.4500 (34.8560417d) Dec: -04 54 38.30 (-4.91064d) Equinox: J2000	Redshift: 2.23	V=23.4+/-0.1 H=21.1	Reference Frame: ICRS
	Comments: Extended=YES					

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	NIFS-HIZE LS2-UV	(7) NIFS-HIZELS-2	WFC3/UVIS, ACCUM, UVIS	F606W			Pattern 1, Exps 1-1 in NIFS-HIZELS2-UV (13) (1)	850 Secs (2613 Secs) [=>871.0 Secs (Pattern 1)] [=>871.0 Secs (Pattern 2)] [=>871.0 Secs (Pattern 3)]	[1]



Proposal 14719 - NIFS-HIZELS2-IR (14) - The detailed properties of star-forming regions at high redshift: a matched-resolution HST-H...

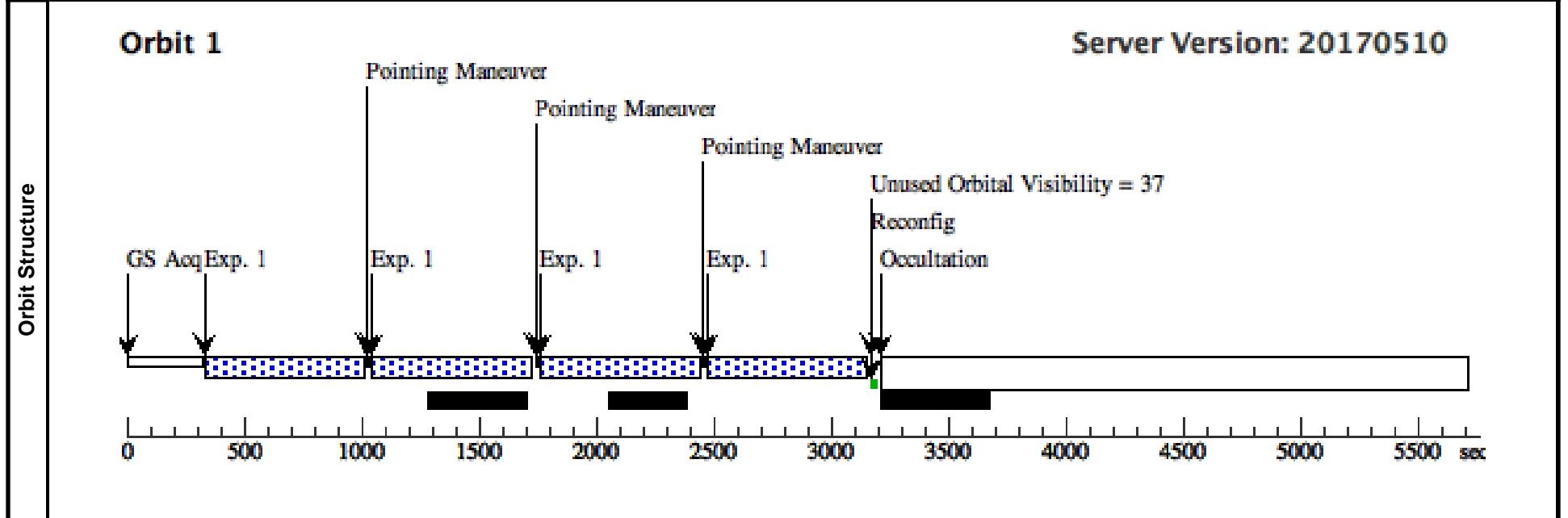
Visit	Proposal 14719, NIFS-HIZELS2-IR (14), completed Wed Jun 21 01:02:00 GMT 2017		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: WFC3/IR		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(2)	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	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(7)	NIFS-HIZELS-2	RA: 02 19 25.4500 (34.8560417d) Dec: -04 54 38.30 (-4.91064d) Equinox: J2000	Redshift: 2.23	V=23.4+/-0.1 H=21.1	Reference Frame: ICRS

Comments: Extended=YES

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	NIFS-HIZE LS2-IR	(7) NIFS-HIZELS-2	WFC3/IR, MULTIACCUM, IR	F140W	NSAMP=14; SAMP-SEQ=SPAR S50			Pattern 2, Exps 1-1 in NIFS-HIZELS2-IR (14) (2)	652.938154 Secs (2611.753 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]



Proposal 14719 - NIFS-HIZELS3-UV (15) - The detailed properties of star-forming regions at high redshift: a matched-resolution HST-...

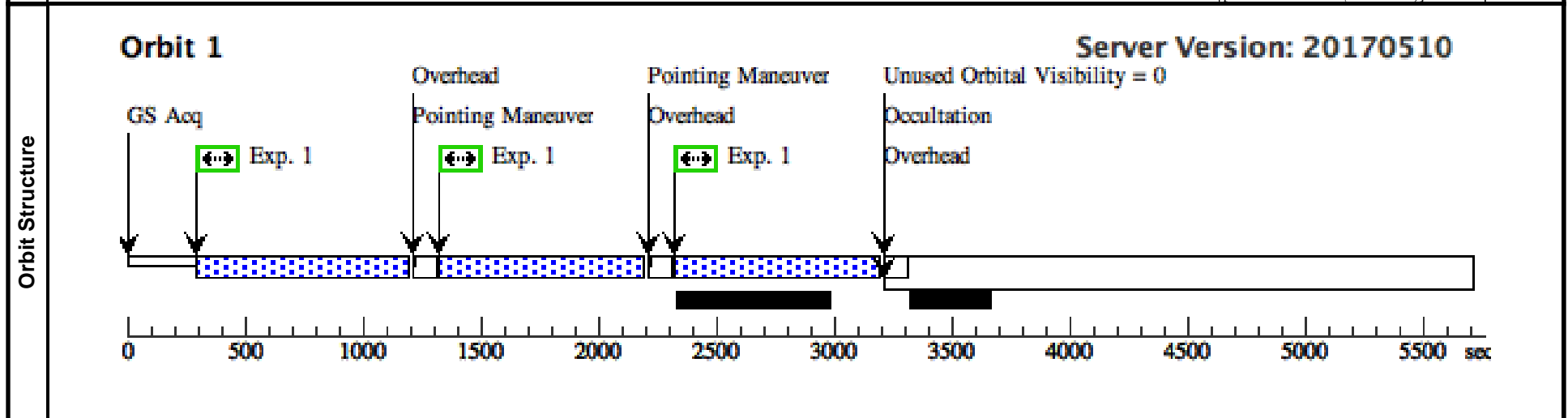
Wed Jun 21 01:02:00 GMT 2017

Visit	Proposal 14719, NIFS-HIZELS3-UV (15), completed		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: WFC3/UVIS		
	Special Requirements: (none)		

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)	NIFS-HIZELS-3	RA: 10 00 27.6700 (150.1152917d) Dec: +02 14 30.60 (2.24183d) Equinox: J2000	Redshift: 2.23	V=23.5+/-0.1 H=21.4	Reference Frame: ICRS
	<i>Comments: Extended=YES</i>					

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	NIFS-HIZE LS3-UV	(8) NIFS-HIZELS-3	WFC3/UVIS, ACCUM, UVIS	F606W			Pattern 1, Exps 1-1 i n NIFS-HIZELS3-U V (15) (1)	850 Secs (2613 Secs) [=>871.0 Secs (Pattern 1)] [=>871.0 Secs (Pattern 2)] [=>871.0 Secs (Pattern 3)]	[1]

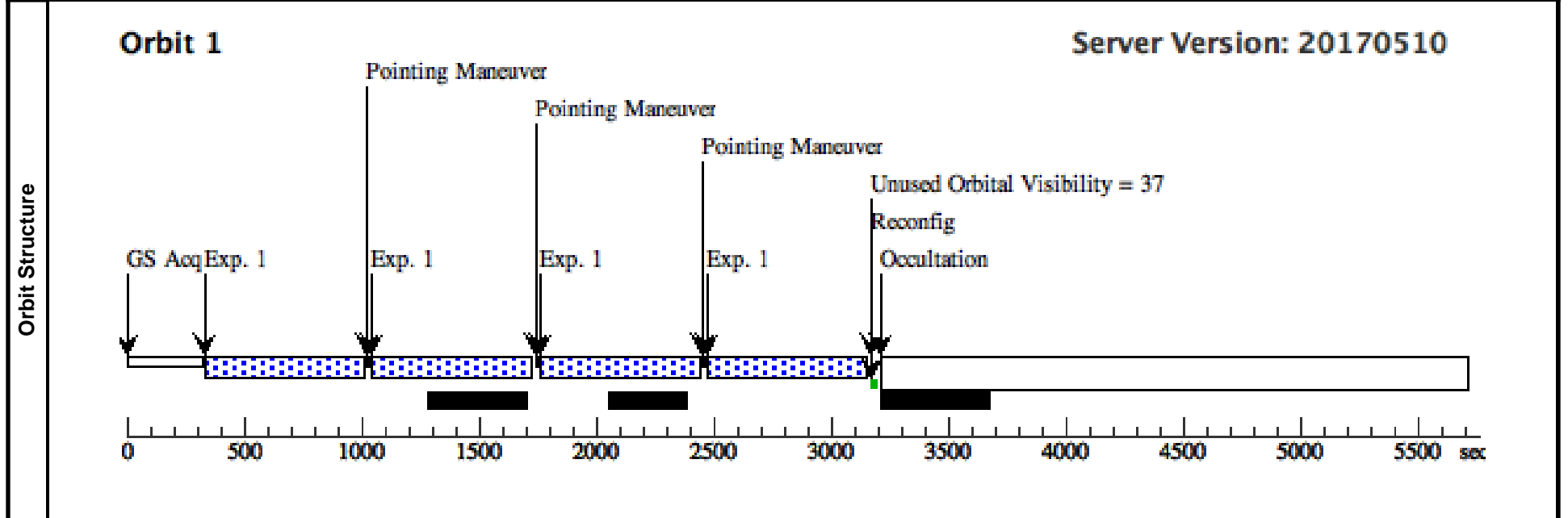


Visit	Proposal 14719, NIFS-HIZELS3-IR (16), completed			Wed Jun 21 01:02:00 GMT 2017
	Diagnostic Status: No Diagnostics			
	Scientific Instruments: WFC3/IR			
	Special Requirements: (none)			

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(2)	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)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(8)	NIFS-HIZELS-3	RA: 10 00 27.6700 (150.1152917d) Dec: +02 14 30.60 (2.24183d) Equinox: J2000	Redshift: 2.23	V=23.5+/-0.1 H=21.4	Reference Frame: ICRS
<i>Comments: Extended=YES</i>						

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	NIFS-HIZE LS3-IR	(8) NIFS-HIZELS-3	WFC3/IR, MULTIACCUM, IR	F140W	NSAMP=14; SAMP-SEQ=SPAR S50		Pattern 2, Exps 1-1 in NIFS-HIZELS3-IR (16) (2)	652.938154 Secs (2611.753 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]



Visit	Proposal 14719, SHiZELS14-UV (17), completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: (none)									
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)	SHiZELS-14	RA: 10 00 51.5200 (150.2146667d) Dec: +02 33 33.20 (2.55922d) Equinox: J2000	Redshift: 2.23	V=23.4+/-0.1 H=21.8	Reference Frame: ICRS				
<i>Comments: Extended=YES</i>										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	SHiZELS14-UV	(9) SHiZELS-14	WFC3/UVIS, ACCUM, UVIS	F606W			Pattern 1, Exps 1-1 i n SHiZELS14-UV (1 7) (1)	850 Secs (2613 Secs) [==>871.0 Secs (Pattern 1)] [==>871.0 Secs (Pattern 2)] [==>871.0 Secs (Pattern 3)]	[1]
Orbit Structure	Orbit 1									

Visit	Proposal 14719, SHiZELS14-IR (18), completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: (none)									
Patterns	#	Primary Pattern	Secondary Pattern	Exposures						
	(2)	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)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(9)	SHiZELS-14	RA: 10 00 51.5200 (150.2146667d) Dec: +02 33 33.20 (2.55922d) Equinox: J2000	Redshift: 2.23	V=23.4+/-0.1 H=21.8	Reference Frame: ICRS				
<i>Comments: Extended=YES</i>										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	SHiZELS14-IR	(9) SHiZELS-14	WFC3/IR, MULTIACCUM, IR	F140W	NSAMP=14; SAMP-SEQ=SPAR S50		Pattern 2, Exps 1-1 in SHiZELS14-IR (18) (2)	652.938154 Secs (2611.753 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]
Orbit Structure	<div style="display: flex; justify-content: space-between;"> Orbit 1 Server Version: 20170510 </div> <p>The diagram illustrates the orbit structure for Orbit 1, spanning from 0 to 5500 seconds. Key events are marked with vertical arrows: GS Acq (at ~100s), Exp. 1 (at ~400s, ~1000s, ~1700s, and ~2400s), Pointing Maneuver (at ~1000s, ~1700s, and ~2400s), Reconfig (at ~3200s), and Occultation (at ~3200s). A blue and white checkered bar highlights the exposure periods. A black bar at the bottom indicates the 'Unused Orbital Visibility = 37' seconds. A scale at the bottom is marked every 500 seconds up to 5500.</p>									

Proposal 14719 - SHiZELS7-IR (52) - The detailed properties of star-forming regions at high redshift: a matched-resolution HST-Halph...

Wed Jun 21 01:02:01 GMT 2017

Visit	Proposal 14719, SHiZELS7-IR (52) Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: (none)									
Patterns	#	Primary Pattern	Secondary Pattern	Exposures						
	(2)	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)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	SHiZELS-7	RA: 02 17 0.4000 (34.2516667d) Dec: -05 01 50.80 (-5.03078d) Equinox: J2000	Redshift: 1.47	V=23.3+/-0.1 H=21.7	Reference Frame: ICRS				
<i>Comments: Extended=YES</i>										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	SHiZELS7-I R	(1) SHiZELS-7	WFC3/IR, MULTIACCUM, IR	F140W	NSAMP=14; SAMP-SEQ=SPAR S50		Pattern 2, Exps 1-1 in SHiZELS7-IR (52) (2)	652.938154 Secs (2611.753 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]
Orbit Structure	Orbit 1 Server Version: 20170510									
	<p>The diagram illustrates the orbit structure over a 5500-second period. Key events include:</p> <ul style="list-style-type: none"> GS Acq: Ground Station Acquisition at approximately 100 seconds. Exp. 1: Four exposure periods, each approximately 200 seconds long, occurring at roughly 300, 1000, 1700, and 2400 seconds. Pointing Maneuver: Three maneuver periods, each approximately 100 seconds long, occurring between the exposure periods. Reconfig: A reconfiguration period of approximately 100 seconds at the end of the fourth exposure. Occultation: A period of approximately 100 seconds where the target is obscured by the Earth's limb. Unused Orbital Visibility = 40: A period of 40 seconds of unused visibility following the occultation. 									