



11904 - UVIS Droplets

Cycle: 17, Proposal Category: CAL/WFC3

(Availability Mode: RESTRICTED)

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	(9) NGC-6752 DEUTERIUM TUNGSTEN	WFC3/UVIS	5	16-Apr-2009 21:19:03.0	yes
02	(9) NGC-6752 DEUTERIUM TUNGSTEN	WFC3/UVIS	5	16-Apr-2009 21:19:26.0	yes
03	(9) NGC-6752 DEUTERIUM TUNGSTEN	WFC3/UVIS	5	16-Apr-2009 21:19:47.0	yes

15 Total Orbits Used

ABSTRACT

To characterize the effects of the contamination (i.e., droplets) on the UVIS window, we will observe a star cluster in three wide band filters (F225W, F555W, and F814W) as well as a narrow band filter (F502N) and step the stars in the cluster across randomly located droplets. The step size is 20 pixels, and we execute a five point line dither for each filter. This should provide for observations both on and off the droplets, for the same star. Internal flat fields are also obtained, but, due to the high f/# of the internal calibration system, the flats will be of limited utility, but will serve to map and crudely track any changes in the droplets. The cluster needs to contain both hot and cool stars, and therefore we select NGC 6752, a nearby globular with a hot horizontal branch. Note, although the total population of HB stars may be larger in systems such as NGC 2419, NGC 6715, and NGC 2808, those clusters are much further away and will not provide a high density of stars over the global image (the droplets are located over the entire frame). There will be three visits (initial, 7 days later, and 30 days later), with each visit requiring 4 orbits. The total program thus requires 12 orbits total.

OBSERVING DESCRIPTION

Primary Goal:

This proposal will measure the brightness of stars as they pass through the UVIS droplets to gauge the effect on the photometry. The relative photometry must be accurate to better than 1% in order to track the variations due to position within a droplet. All visits should be performed at the same orientation and using the same guide stars, in order to scan the stars across the same positions on the detector each time. This will minimize any other systematic errors that could dominate the characterization.

Target

A star cluster is ideal for this study as it provides a large number of stars spaced over the detector. As we wish to characterize the affect of the droplets on photometry in both blue and red filters, we require a cluster with both hot and cool stars over the entire field of view. NGC 6752 is a nearby globular with a hot horizontal branch at $V = 14 - 16$, and a rich main-sequence beginning at $V = 17$. A star cluster is also ideal for testing the effects of the droplets on large and small aperture photometry.

Observations:

We select a blue (F225W), visible (F555W), and redder (F814W) filter to characterize the effects of the droplets with wavelength, as well as narrowband filter (F502N). The observations in F555W and F814W require 1 one orbit each given the five point line dither (in X) to move the star across the droplet features. Each step is 20 pixels and is executed with a simple UVIS-DITHER-LINE pattern. The exposure time (550 s) is chosen to fill each orbit and will provide high S/N observations of a large part of the main-sequence of the cluster. The observations in F225W are much shallower as the horizontal branch will saturate quickly, and therefore are also coupled with longer F502N observations at each dither point to maximize orbit efficiency. The combined dither pattern for this set of observations (6 points) requires two orbits. The first visit (01) consists of these four orbits of observations. At the end of this visit, we will obtain an internal flat field in the four filters to track any changes in the droplets. Due to the high f# of the beam, this may not be very useful. The exposure times for the Tungsten bulb (redder filters) and D2 bulb (F225W) are taken from ISR-2008-21. A second D2 exposure is added in case the lamp delays in firing, which it does occasionally.

Visit 02 is a repeat of the above set executed 1-2 weeks after the initial observations to map the variations of the droplets with time.

Visit 03 is a second repeat of the above set executed 2-6 weeks after Visit 02 days after the initial observations to map the variations of the droplets with time.

In total, the program requires three visits each with 4 orbits, for 12 external orbits. An additional 3 internal orbits are required for the internal flat field observations.

ADDITIONAL COMMENTS

The same orientation and same guide star is required for all observations.

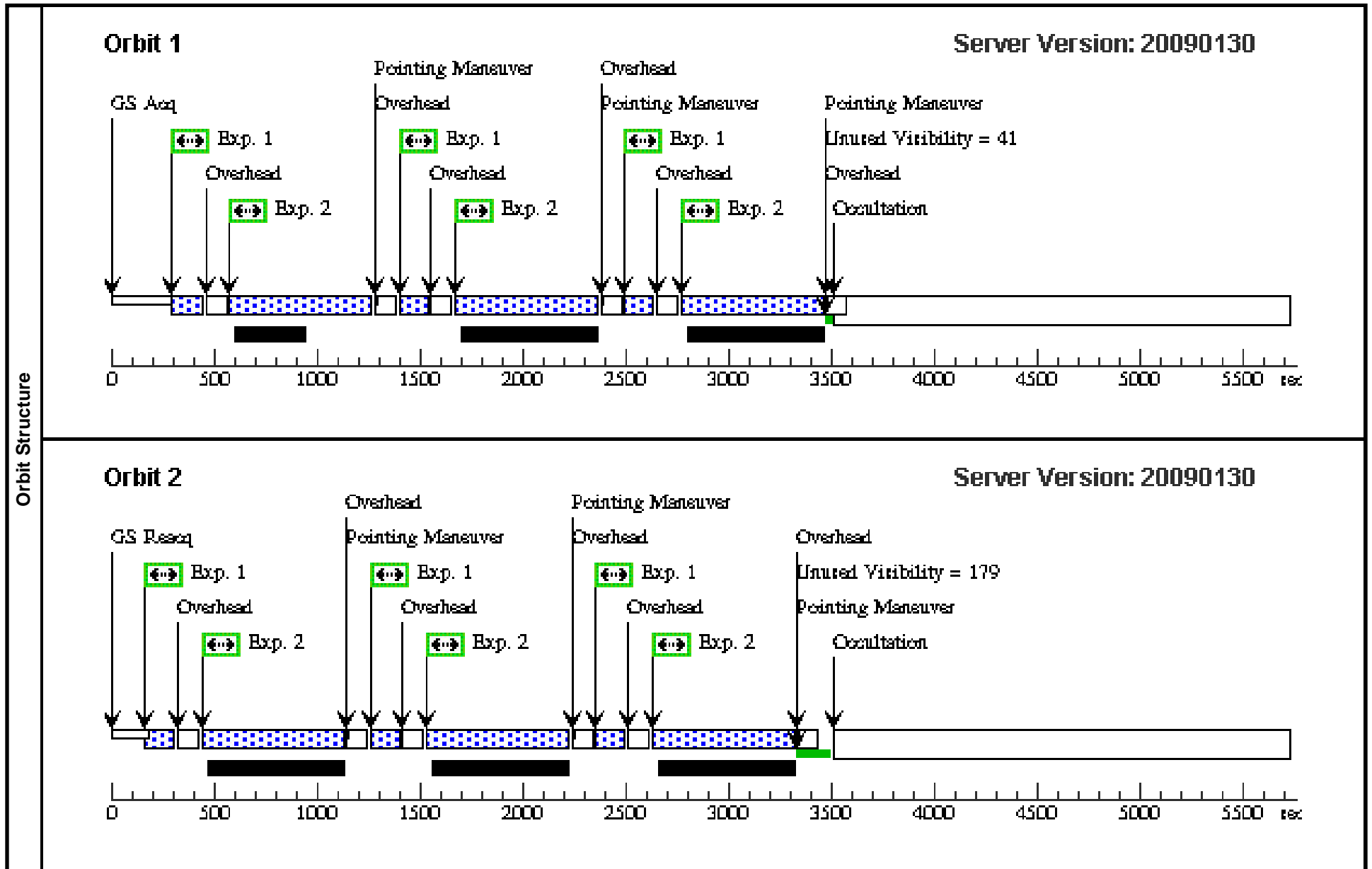
Proposal 11904 - Visit 01 - UVIS Droplets

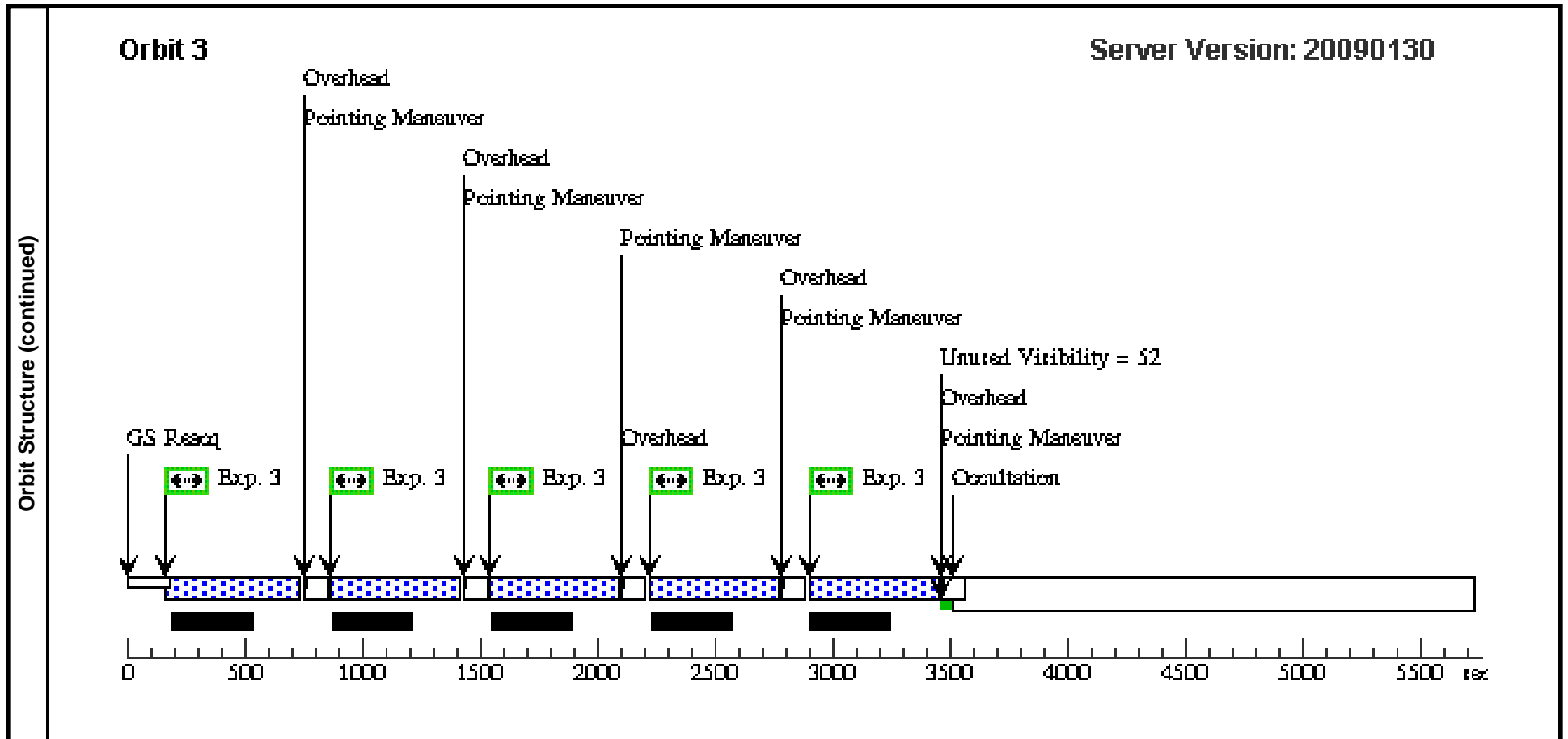
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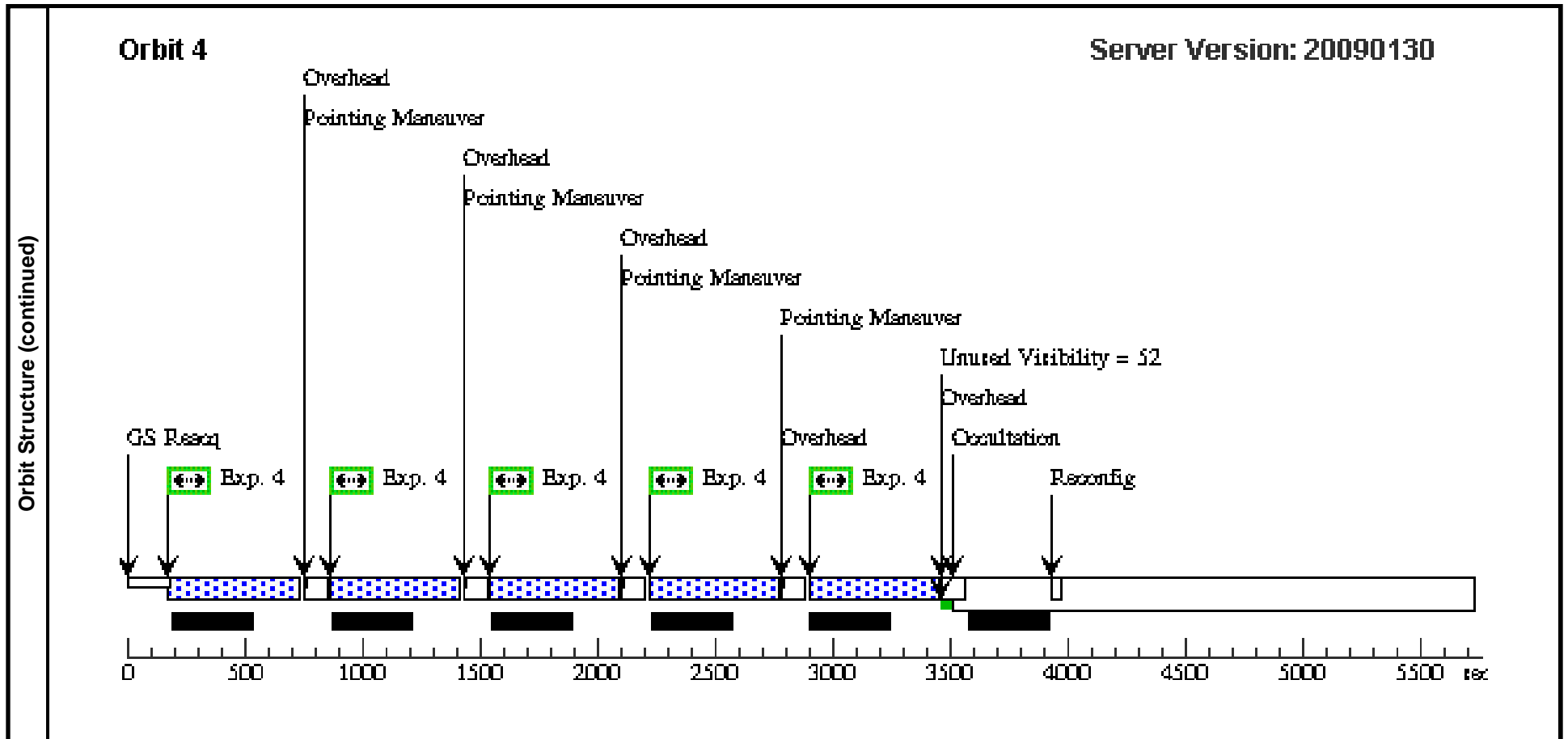
Visit	Proposal 11904, Visit 01 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: (none)									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
		(3)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=5 Point Spacing=0.8 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=0 Angle Between Sides= Center Pattern=false		(3), (4)				
	(4)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=6 Point Spacing=.8 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=0 Angle Between Sides= Center Pattern=false		(1-2)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(9)	NGC-6752	RA: 19 10 51.8000 (287.7158333d) Dec: -59 58 55.00 (-59.98194d) Equinox: J2000		V=17+/-0.1	Reference Frame: ICRS				
<i>Comments: This object was generated by the targetselector and retrieved from the NED database.</i>										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(9) NGC-6752	WFC3/UVIS, ACCUM, UVIS	F225W	CR-SPLIT=NO		Pattern 4, Exps 1-2 (4)	120 Secs [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)] [=>(Pattern 5)] [=>(Pattern 6)]	[1] [2]
2		(9) NGC-6752	WFC3/UVIS, ACCUM, UVIS	F502N	CR-SPLIT=NO		Pattern 4, Exps 1-2 (4)	670 Secs [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)] [=>(Pattern 5)] [=>(Pattern 6)]	[1] [2]	

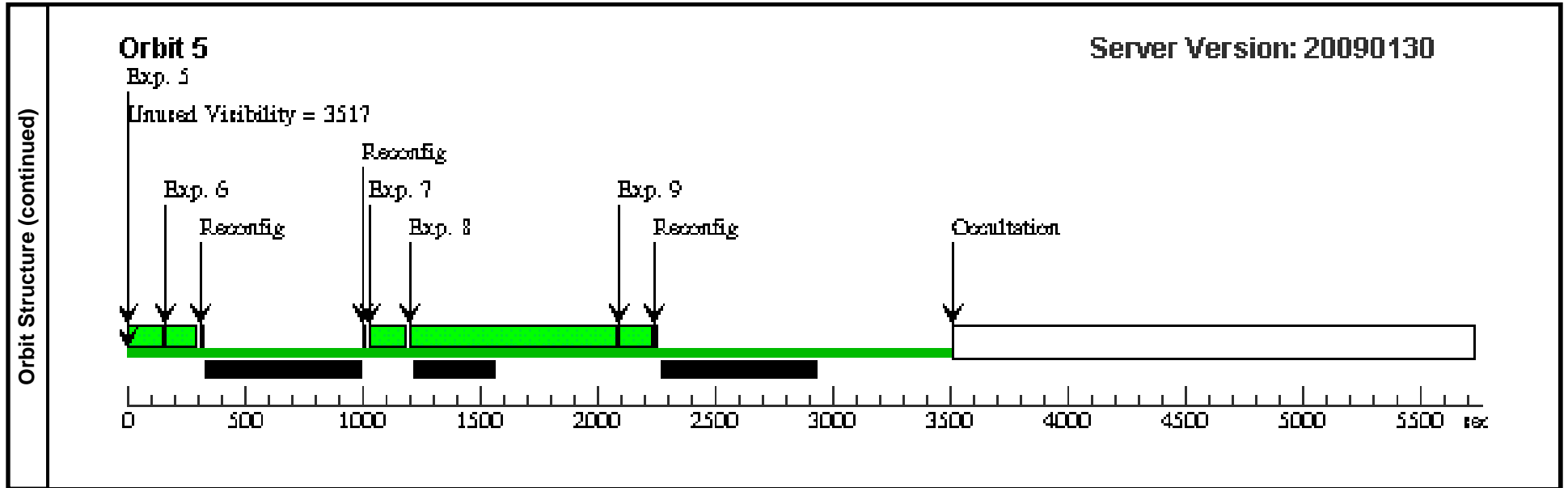
Proposal 11904 - Visit 01 - UVIS Droplets

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
Exposures (continued)	3	(9) NGC-6752	WFC3/UVIS, ACCUM, UVIS	F555W	CR-SPLIT=NO		Pattern 3, Exps 3-3 (3)	550 Secs [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)] [==>(Pattern 5)]	[3]
	4	(9) NGC-6752	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO		Pattern 3, Exps 4-4 (3)	550 Secs [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)] [==>(Pattern 5)]	[4]
	5	DEUTERIUM	WFC3/UVIS, ACCUM, UVIS	F225W	CR-SPLIT=NO			16.6 Secs [==>]	[5]
	6	DEUTERIUM	WFC3/UVIS, ACCUM, UVIS	F225W	CR-SPLIT=NO			16.6 Secs [==>]	[5]
	7	TUNGSTEN	WFC3/UVIS, ACCUM, UVIS	F555W	CR-SPLIT=NO			14.4 Secs [==>]	[5]
	8	TUNGSTEN	WFC3/UVIS, ACCUM, UVIS	F502N	CR-SPLIT=NO			742.1 Secs [==>]	[5]
	9	TUNGSTEN	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO			2 Secs [==>]	[5]









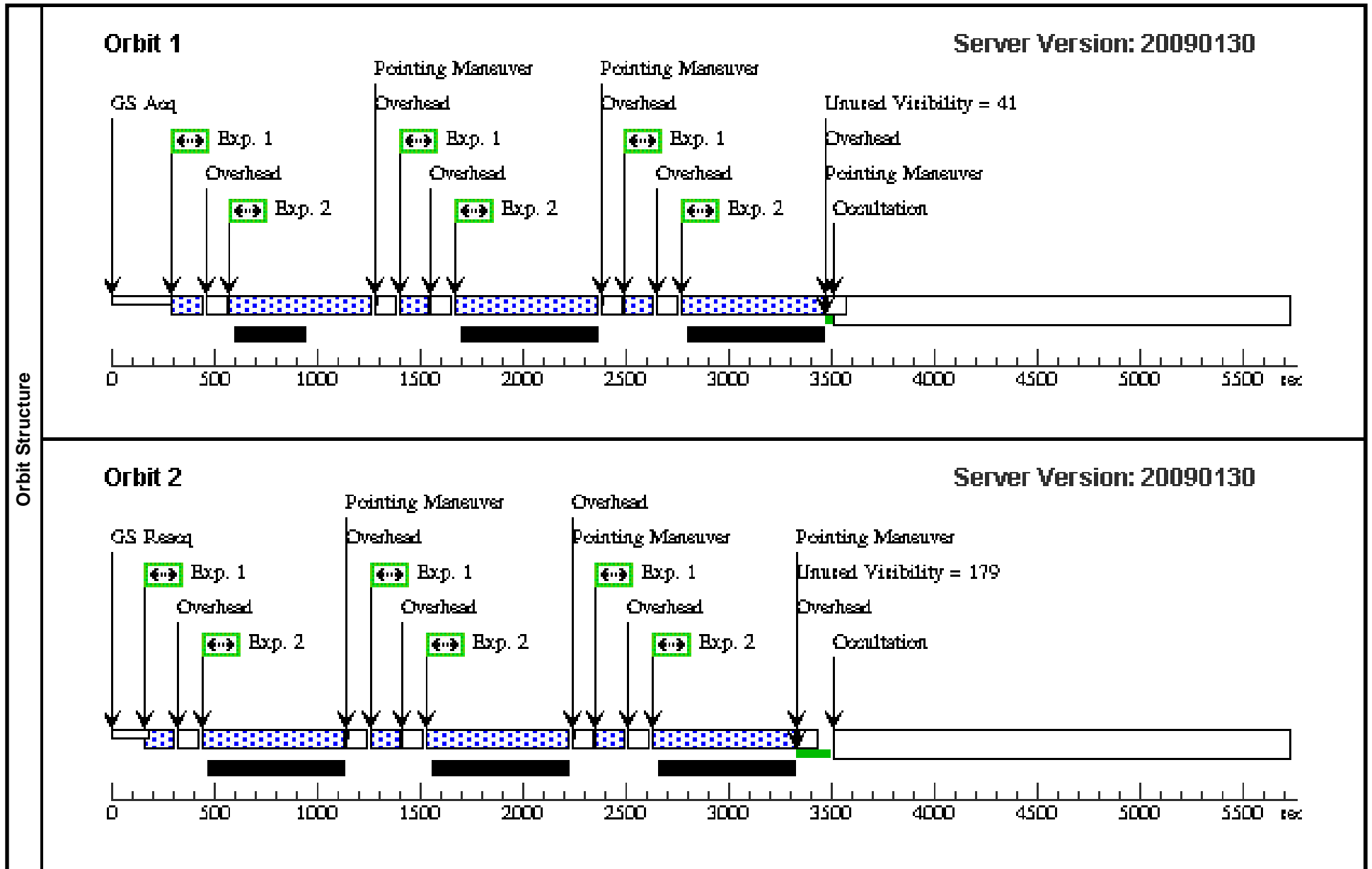
Proposal 11904 - Visit 02 - UVIS Droplets

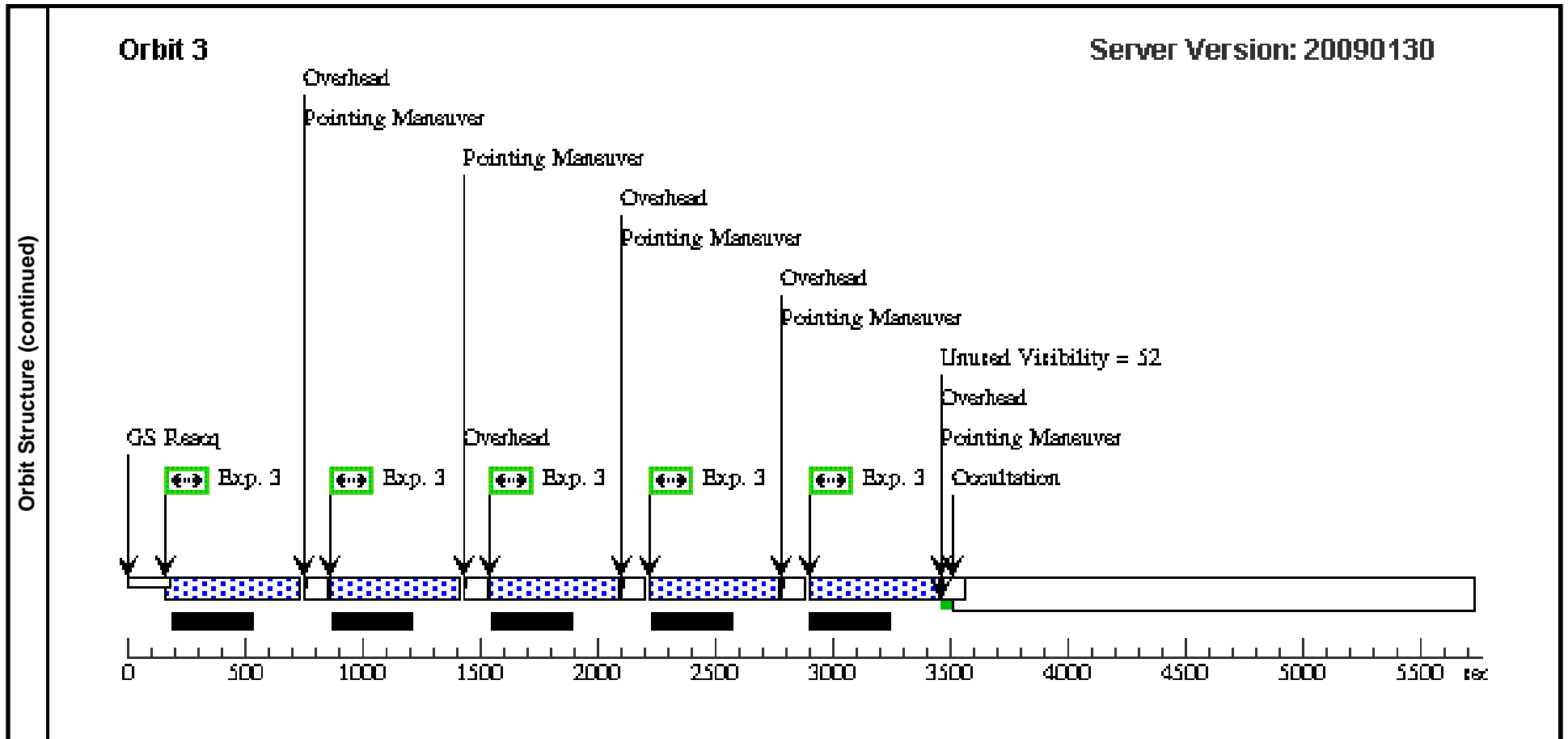
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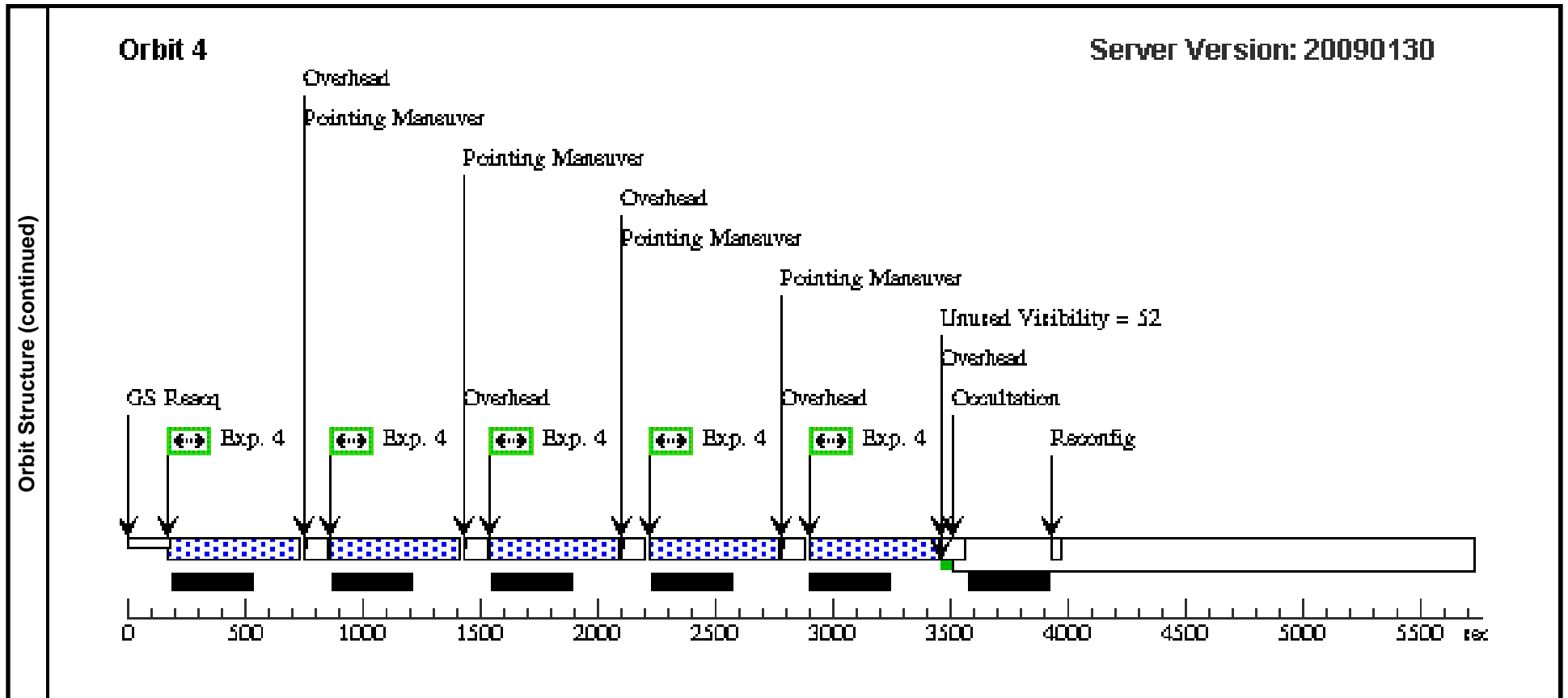
Visit	Proposal 11904, Visit 02 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: SAME ORIENT AS 01; AFTER 01 BY 6 D TO 14 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
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	(4)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=6 Point Spacing=.8 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=0 Angle Between Sides= Center Pattern=false		(1-2)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(9)	NGC-6752	RA: 19 10 51.8000 (287.7158333d) Dec: -59 58 55.00 (-59.98194d) Equinox: J2000		V=17+/-0.1	Reference Frame: ICRS				
	<i>Comments: This object was generated by the targetselector and retrieved from the NED database.</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(9) NGC-6752	WFC3/UVIS, ACCUM, UVIS	F225W	CR-SPLIT=NO		Pattern 4, Exps 1-2 (4)	120 Secs [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)] [==>(Pattern 5)] [==>(Pattern 6)]	[1] [2]
2		(9) NGC-6752	WFC3/UVIS, ACCUM, UVIS	F502N	CR-SPLIT=NO		Pattern 4, Exps 1-2 (4)	670 Secs [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)] [==>(Pattern 5)] [==>(Pattern 6)]	[1] [2]	

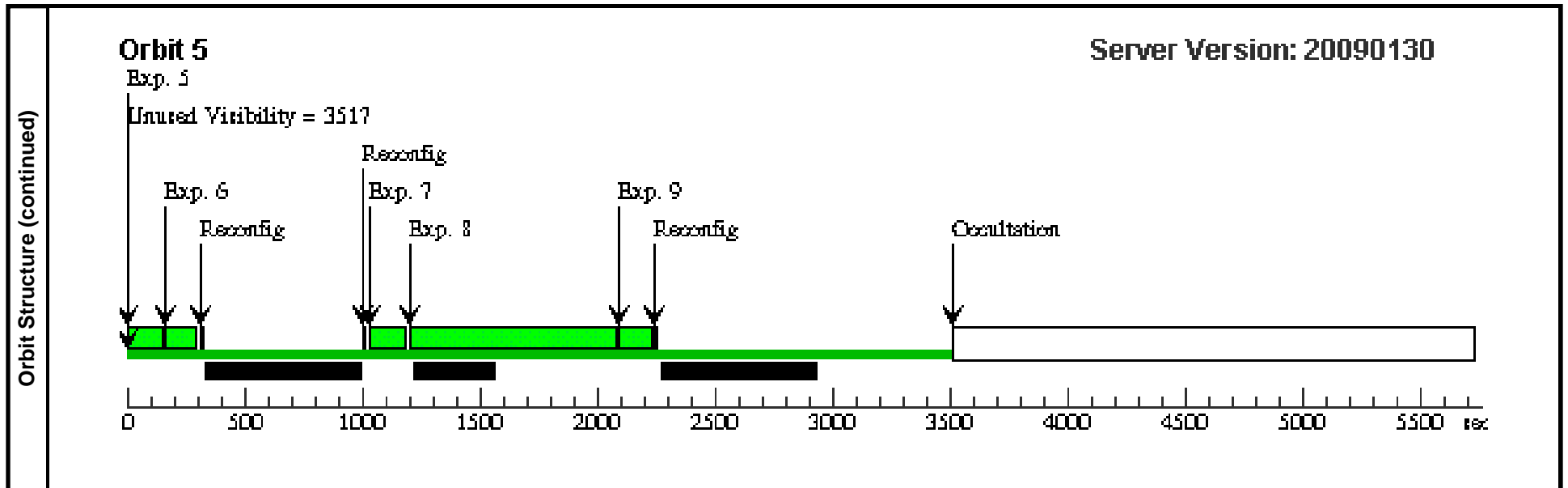
Proposal 11904 - Visit 02 - UVIS Droplets

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
Exposures (continued)	3	(9) NGC-6752	WFC3/UVIS, ACCUM, UVIS	F555W	CR-SPLIT=NO		Pattern 3, Exps 3-3 (3)	550 Secs [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)] [==>(Pattern 5)]	[3]
	4	(9) NGC-6752	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO		Pattern 3, Exps 4-4 (3)	550 Secs [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)] [==>(Pattern 5)]	[4]
	5	DEUTERIUM	WFC3/UVIS, ACCUM, UVIS	F225W	CR-SPLIT=NO			16.6 Secs [==>]	[5]
	6	DEUTERIUM	WFC3/UVIS, ACCUM, UVIS	F225W	CR-SPLIT=NO			16.6 Secs [==>]	[5]
	7	TUNGSTEN	WFC3/UVIS, ACCUM, UVIS	F555W	CR-SPLIT=NO			14.4 Secs [==>]	[5]
	8	TUNGSTEN	WFC3/UVIS, ACCUM, UVIS	F502N	CR-SPLIT=NO			742.1 Secs [==>]	[5]
	9	TUNGSTEN	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO			2 Secs [==>]	[5]









Proposal 11904 - Visit 03 - UVIS Droplets

Fri Apr 17 01:19:58 GMT 2009

Visit		Proposal 11904, Visit 03								
		Diagnostic Status: No Diagnostics								
		Scientific Instruments: WFC3/UVIS								
		Special Requirements: SAME ORIENT AS 01; AFTER 02 BY 14 D TO 45 D								
Patterns	#	Primary Pattern		Secondary Pattern		Exposures				
	(3)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=5 Point Spacing=0.8 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=0 Angle Between Sides= Center Pattern=false			(3), (4)				
	(4)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=6 Point Spacing=.8 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=0 Angle Between Sides= Center Pattern=false			(1-2)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(9)	NGC-6752	RA: 19 10 51.8000 (287.7158333d) Dec: -59 58 55.00 (-59.98194d) Equinox: J2000		V=17+/-0.1	Reference Frame: ICRS				
<i>Comments: This object was generated by the targetselector and retrieved from the NED database.</i>										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(9) NGC-6752	WFC3/UVIS, ACCUM, UVIS	F225W	CR-SPLIT=NO		Pattern 4, Exps 1-2 (4)	120 Secs	
									[==>(Pattern 1)]	[1]
									[==>(Pattern 2)]	
								[==>(Pattern 3)]		
								[==>(Pattern 4)]	[2]	
								[==>(Pattern 5)]		
								[==>(Pattern 6)]		
2		(9) NGC-6752	WFC3/UVIS, ACCUM, UVIS	F502N	CR-SPLIT=NO			Pattern 4, Exps 1-2 (4)	670 Secs	
								[==>(Pattern 1)]	[1]	
								[==>(Pattern 2)]		
								[==>(Pattern 3)]		
								[==>(Pattern 4)]	[2]	
								[==>(Pattern 5)]		
								[==>(Pattern 6)]		

Proposal 11904 - Visit 03 - UVIS Droplets

	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
Exposures (continued)	3		(9) NGC-6752	WFC3/UVIS, ACCUM, UVIS	F555W	CR-SPLIT=NO		Pattern 3, Exps 3-3 (3)	550 Secs [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)] [==>(Pattern 5)]	[3]
	4		(9) NGC-6752	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO		Pattern 3, Exps 4-4 (3)	550 Secs [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)] [==>(Pattern 5)]	[4]
	5		DEUTERIUM	WFC3/UVIS, ACCUM, UVIS	F225W	CR-SPLIT=NO			16.6 Secs [==>]	[5]
	6		DEUTERIUM	WFC3/UVIS, ACCUM, UVIS	F225W	CR-SPLIT=NO			16.6 Secs [==>]	[5]
	7		TUNGSTEN	WFC3/UVIS, ACCUM, UVIS	F555W	CR-SPLIT=NO			14.4 Secs [==>]	[5]
	8		TUNGSTEN	WFC3/UVIS, ACCUM, UVIS	F502N	CR-SPLIT=NO			742.1 Secs [==>]	[5]
	9		TUNGSTEN	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO			2 Secs [==>]	[5]

