



15642 - An Independent Determination of the Hubble Constant

Cycle: 26, 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	(3) NGC-5643	ACS/WFC WFC3/IR	4	26-Nov-2019 18:00:41.0	yes
02	(1) NGC-1404	ACS/WFC WFC3/IR	4	26-Nov-2019 18:00:43.0	yes
03	(1) NGC-1404	ACS/WFC WFC3/IR	4	26-Nov-2019 18:00:45.0	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>
04	(1) NGC-1404	ACS/WFC WFC3/IR	4	26-Nov-2019 18:00:47.0	yes
05	(1) NGC-1404	ACS/WFC WFC3/IR	5	26-Nov-2019 18:00:49.0	yes
06	(2) NGC-5338	ACS/WFC WFC3/IR	6	26-Nov-2019 18:00:53.0	yes
07	(3) NGC-5643	ACS/WFC WFC3/UVIS	4	26-Nov-2019 18:00:55.0	yes
08	(1) NGC-1404	ACS/WFC WFC3/UVIS	4	26-Nov-2019 18:00:56.0	yes
10	(1) NGC-1404	ACS/WFC WFC3/UVIS	4	26-Nov-2019 18:00:58.0	yes
11	(1) NGC-1404	ACS/WFC WFC3/UVIS	4	26-Nov-2019 18:01:00.0	yes
12	(1) NGC-1404	ACS/WFC WFC3/UVIS	5	26-Nov-2019 18:01:02.0	yes
13	(2) NGC-5338	ACS/WFC WFC3/UVIS	6	26-Nov-2019 18:01:05.0	yes

54 Total Orbits Used

ABSTRACT

Constraints on H_0 , based on cosmological modeling of the Planck data and local values based on the Cepheid distance scale tied to Type Ia supernovae (SNe Ia), differ by several sigma. It is not yet understood whether this tension is a result of systematic errors, or perhaps an indication of fundamental physics beyond the standard cosmological model. Our aim in this proposal is straightforward: increase the number of galaxies with well-measured distances using the Tip of the Red Giant Branch (TRGB) for the calibration of SNe Ia. TRGB distances can be precisely and accurately measured out to distances of 30 Mpc using HST. Out to these distances, their precision and accuracy rivals that of the Cepheid Leavitt Law. Moreover TRGB measurements in the halos of galaxies offer many advantages over Cepheids, including decreased sensitivity to dust; and they are less affected by crowding than measurements in the disks of galaxies. Most importantly for our purposes, the TRGB measurements, in combination

Proposal 15642 (STScI Edit Number: 2, Created: Tuesday, November 26, 2019 at 6:01:06 PM Eastern Standard Time) - Overview
with future Gaia parallaxes, will provide an independent determination of H_0 to an uncertainty of 1.5%, and a means of assessing the significance of the current tension in local versus high-redshift determinations of H_0 .

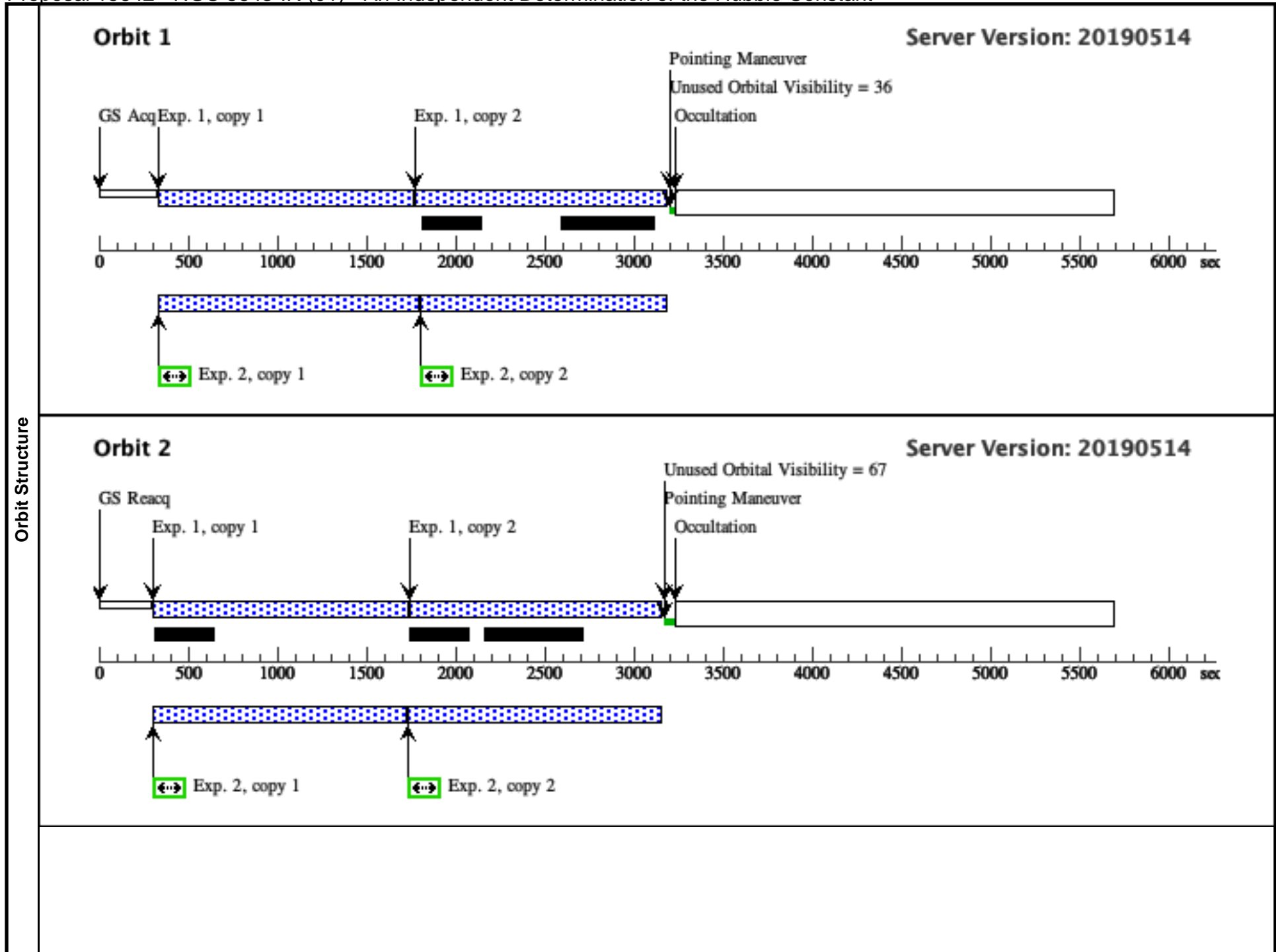
OBSERVING DESCRIPTION

CCHP

Proposal 15642 - NGC 5643-IR (01) - An Independent Determination of the Hubble Constant

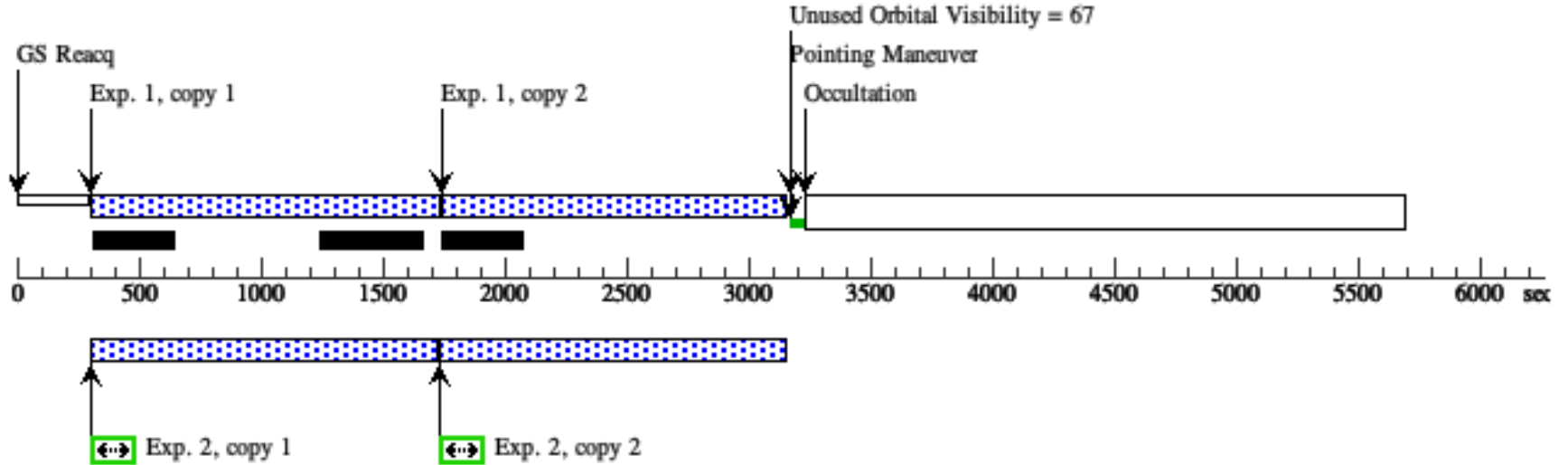
Tue Nov 26 23:01:06 GMT 2019

Visit	Proposal 15642, NGC 5643-IR (01), completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR, ACS/WFC Special Requirements: ORIENT 118D TO 120 D								
	Patterns	# (1)	Primary Pattern 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	Secondary Pattern	Exposures (1-2)			
Fixed Targets	# (3)	Name NGC-5643	Target Coordinates RA: 14 32 42.3400 (218.1764167d) Dec: -44 12 37.00 (-44.21028d) Equinox: J2000	Targ. Coord. Corrections	Fluxes V=25.0	Miscellaneous Reference Frame: NED			
Comments: This object was generated by the targetselector and retrieved from the NED database. Category=GALAXY Description=[DISK, HALO] Extended=YES									
Exposures	# 1	Label (3) NGC-5643	Target WFC3/IR, MULTIACCUM, IR-FIX	Config,Mode,Aperture F110W	Spectral Els. NSAMP=15; SAMP-SEQ=SPAR S100	Opt. Params. Special Reqs.	Groups Pattern 1, Exps 1-2 in NGC 5643-IR (01) (1) Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in NGC 5643-IR (01)	Exp. Time (Total)/[Actual Dur.] 1402.936813 Secs X 2 (11223.495 Secs) [==>(Pattern 1, Copy 1)] [==>(Pattern 1, Copy 2)] [==>(Pattern 2, Copy 1)] [==>(Pattern 2, Copy 2)] [==>(Pattern 3, Copy 1)] [==>(Pattern 3, Copy 2)] [==>(Pattern 4, Copy 1)] [==>(Pattern 4, Copy 2)]	Orbit [1] [2] [3] [4]
	2	(3) NGC-5643	ACS/WFC, ACCUM, WFC	F606W		Special Reqs.	Pattern 1, Exps 1-2 in NGC 5643-IR (01) (1) Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in NGC 5643-IR (01)	1200 Secs X 2 (10286 Secs) [==>1255.0 Secs (Pattern 1, Copy 1)] [==>1255.0 Secs (Pattern 1, Copy 2)] [==>1296.0 Secs (Pattern 2, Copy 1)] [==>1296.0 Secs (Pattern 2, Copy 2)] [==>1296.0 Secs (Pattern 3, Copy 1)] [==>1296.0 Secs (Pattern 3, Copy 2)] [==>1296.0 Secs (Pattern 4, Copy 1)] [==>1296.0 Secs (Pattern 4, Copy 2)]	[1] [2] [3] [4]



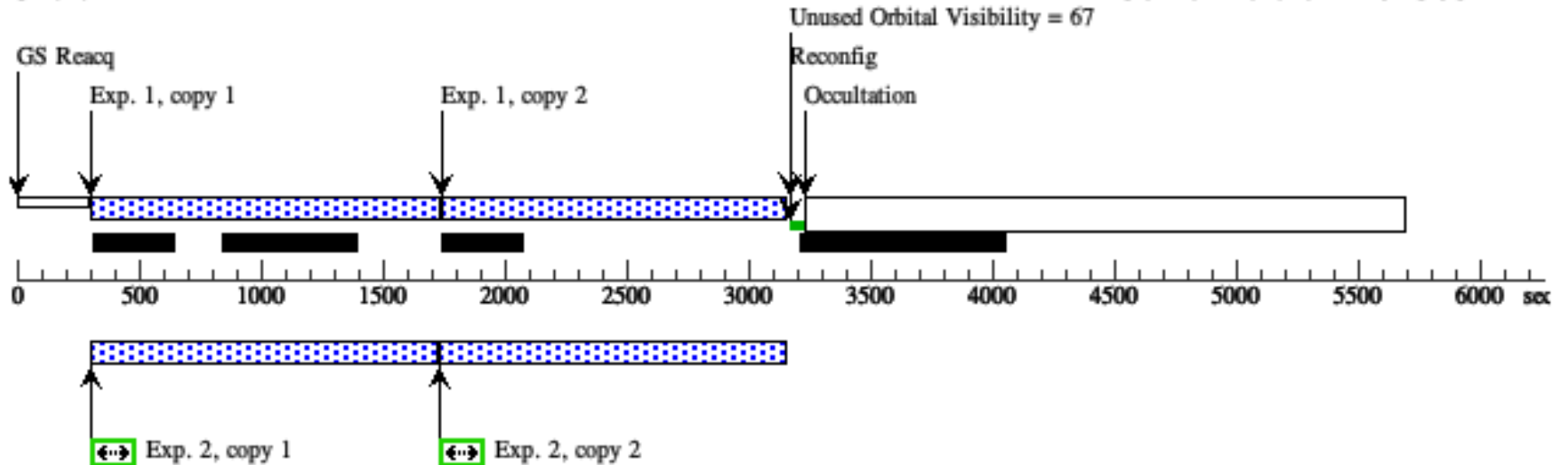
Orbit 3

Server Version: 20190514



Orbit 4

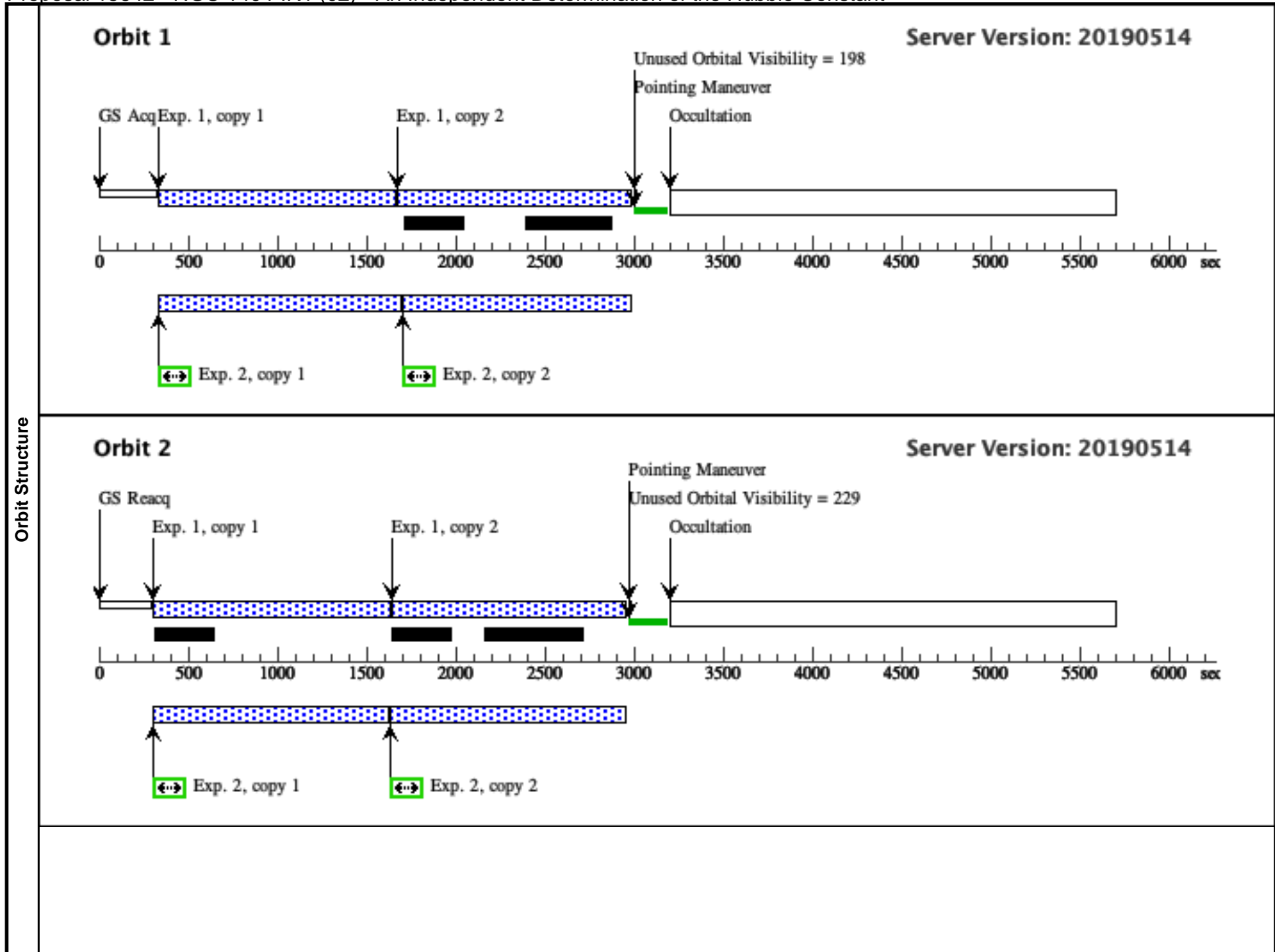
Server Version: 20190514



Proposal 15642 - NGC 1404-IR1 (02) - An Independent Determination of the Hubble Constant

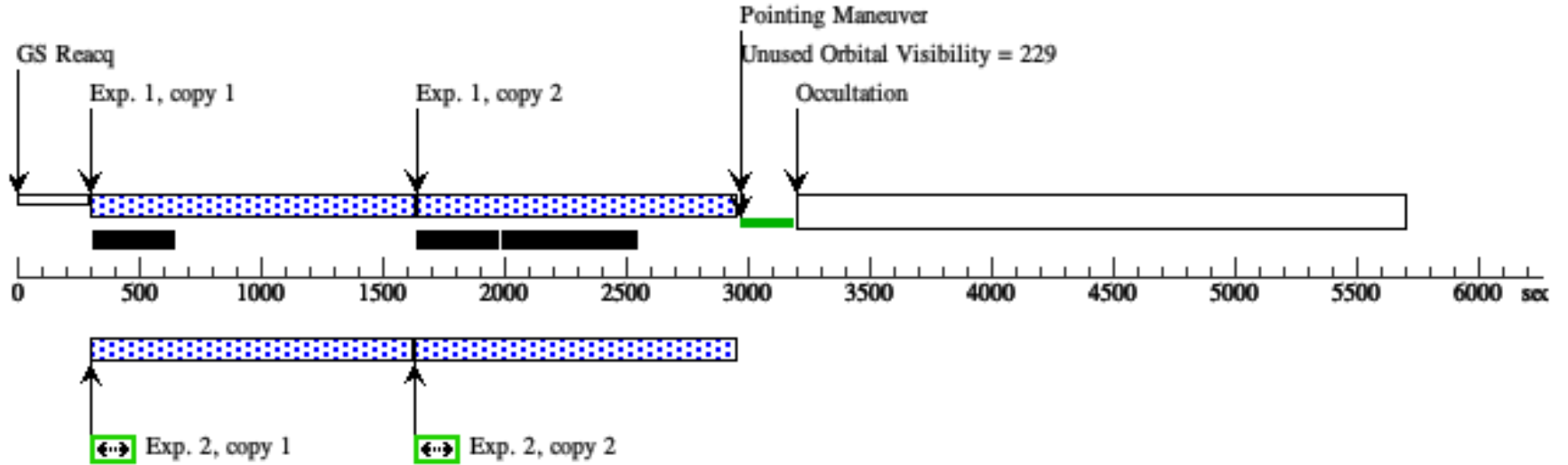
Tue Nov 26 23:01:06 GMT 2019

Visit	Proposal 15642, NGC 1404-IR1 (02), completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR, ACS/WFC Special Requirements: ORIENT 286D TO 288 D									
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	(1)	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		(1-2)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	NGC-1404	RA: 03 38 33.7700 (54.6407083d) Dec: -35 28 47.30 (-35.47981d) Equinox: J2000		V=26.0	Reference Frame: NED				
<i>Comments: This object was generated by the targetselector and retrieved from the NED database.</i> Category=GALAXY Description=[DISK, HALO] Extended=YES										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(1) NGC-1404	WFC3/IR, MULTIACCUM, IR-FIX	F110W	NSAMP=14; SAMP-SEQ=SPAR S100			Pattern 1, Exps 1-2 in NGC 1404-IR1 (02) (1) Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in NGC 1404-IR1 (02)	1302.93649 Secs X 2 (10423.492 Secs) [==>(Pattern 1, Copy 1)] [==>(Pattern 1, Copy 2)] [==>(Pattern 2, Copy 1)] [==>(Pattern 2, Copy 2)] [==>(Pattern 3, Copy 1)] [==>(Pattern 3, Copy 2)] [==>(Pattern 4, Copy 1)] [==>(Pattern 4, Copy 2)]	[1] [2] [3] [4]
2	(1) NGC-1404	ACS/WFC, ACCUM, WFC	F606W				Pattern 1, Exps 1-2 in NGC 1404-IR1 (02) (1) Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in NGC 1404-IR1 (02)	1180 Secs X 2 (9486 Secs) [==>1155.0 Secs (Pattern 1, Copy 1)] [==>1155.0 Secs (Pattern 1, Copy 2)] [==>1196.0 Secs (Pattern 2, Copy 1)] [==>1196.0 Secs (Pattern 2, Copy 2)] [==>1196.0 Secs (Pattern 3, Copy 1)] [==>1196.0 Secs (Pattern 3, Copy 2)] [==>1196.0 Secs (Pattern 4, Copy 1)] [==>1196.0 Secs (Pattern 4, Copy 2)]	[1] [2] [3] [4]	



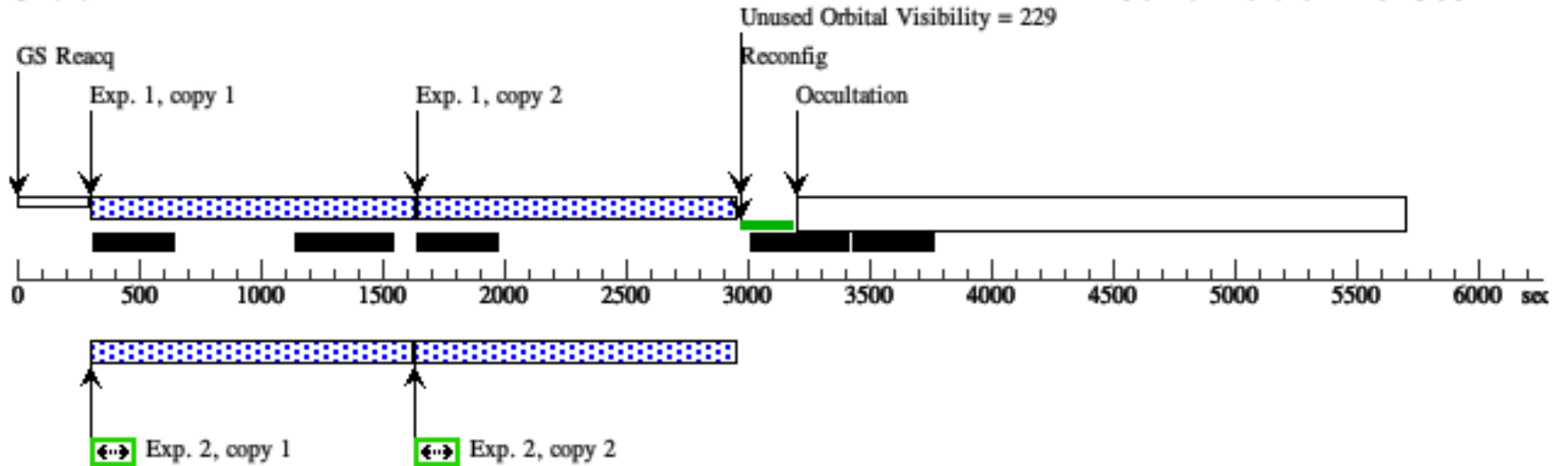
Orbit 3

Server Version: 20190514



Orbit 4

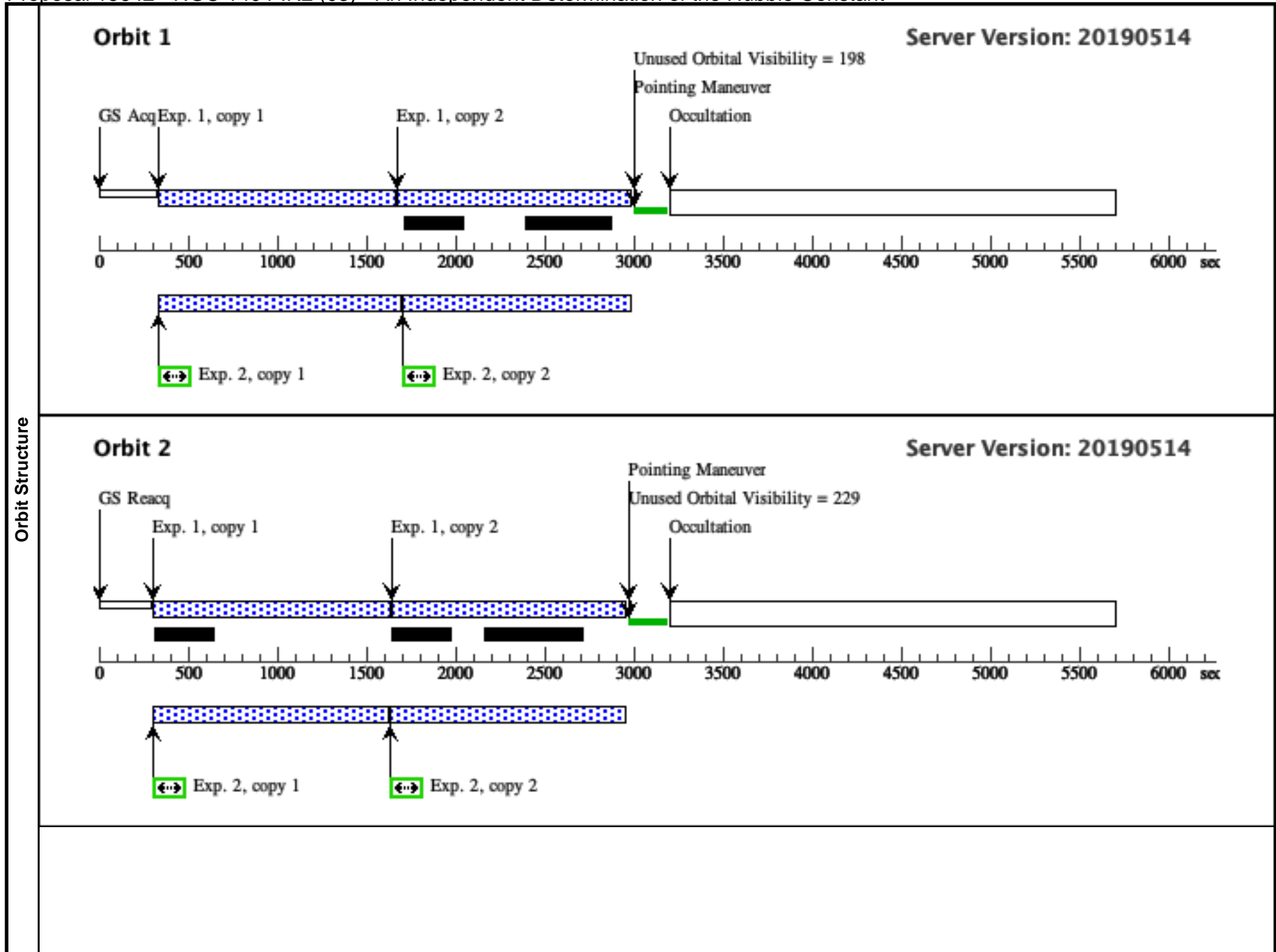
Server Version: 20190514



Proposal 15642 - NGC 1404-IR2 (03) - An Independent Determination of the Hubble Constant

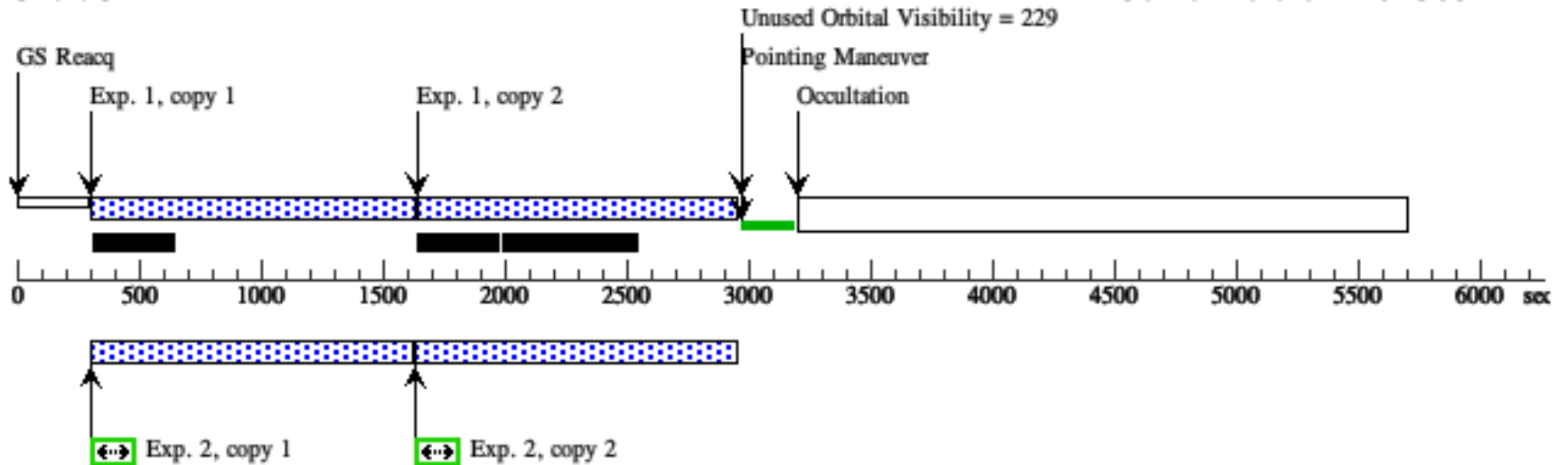
Tue Nov 26 23:01:06 GMT 2019

Visit	Proposal 15642, NGC 1404-IR2 (03), completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR, ACS/WFC Special Requirements: ORIENT 286D TO 288 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
	(1)	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		(1-2)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	NGC-1404	RA: 03 38 33.7700 (54.6407083d) Dec: -35 28 47.30 (-35.47981d) Equinox: J2000		V=26.0	Reference Frame: NED				
<i>Comments: This object was generated by the targetselector and retrieved from the NED database.</i> Category=GALAXY Description=[DISK, HALO] Extended=YES										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(1) NGC-1404	WFC3/IR, MULTIACCUM, IR-FIX	F110W	NSAMP=14; SAMP-SEQ=SPAR S100			Pattern 1, Exps 1-2 in NGC 1404-IR2 (03) (1) Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in NGC 1404-IR2 (03)	1302.93649 Secs X 2 (10423.492 Secs) [==>(Pattern 1, Copy 1)] [==>(Pattern 1, Copy 2)] [==>(Pattern 2, Copy 1)] [==>(Pattern 2, Copy 2)] [==>(Pattern 3, Copy 1)] [==>(Pattern 3, Copy 2)] [==>(Pattern 4, Copy 1)] [==>(Pattern 4, Copy 2)]
2		(1) NGC-1404	ACS/WFC, ACCUM, WFC		F606W			Pattern 1, Exps 1-2 in NGC 1404-IR2 (03) (1) Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in NGC 1404-IR2 (03)	1180 Secs X 2 (9486 Secs) [==>1155.0 Secs (Pattern 1, Copy 1)] [==>1155.0 Secs (Pattern 1, Copy 2)] [==>1196.0 Secs (Pattern 2, Copy 1)] [==>1196.0 Secs (Pattern 2, Copy 2)] [==>1196.0 Secs (Pattern 3, Copy 1)] [==>1196.0 Secs (Pattern 3, Copy 2)] [==>1196.0 Secs (Pattern 4, Copy 1)] [==>1196.0 Secs (Pattern 4, Copy 2)]	[1] [2] [3] [4]



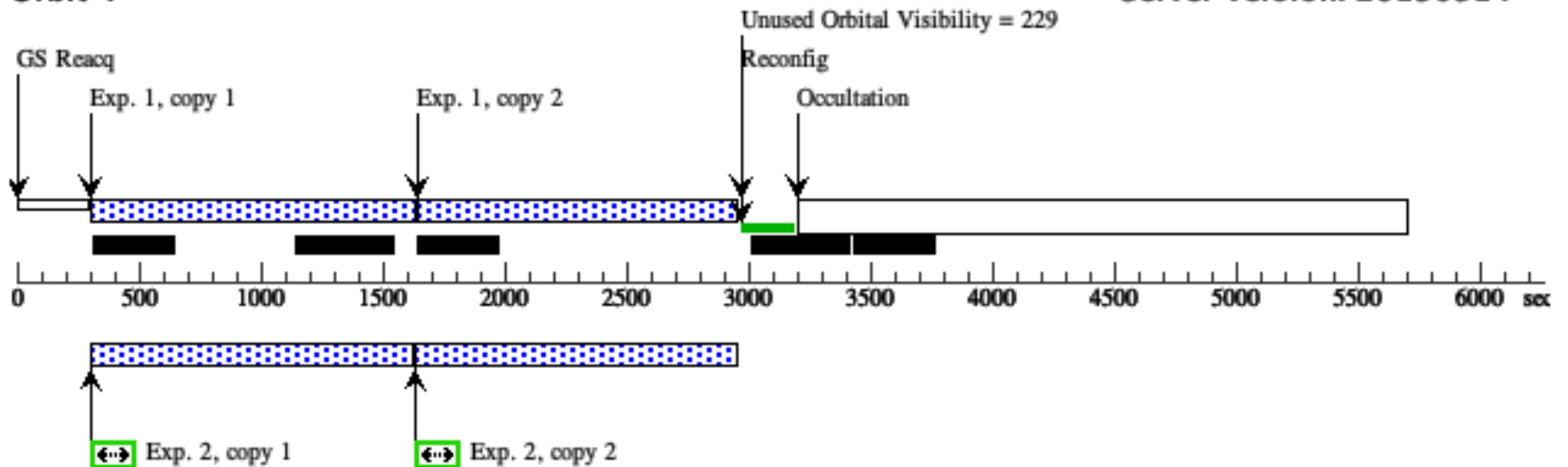
Orbit 3

Server Version: 20190514



Orbit 4

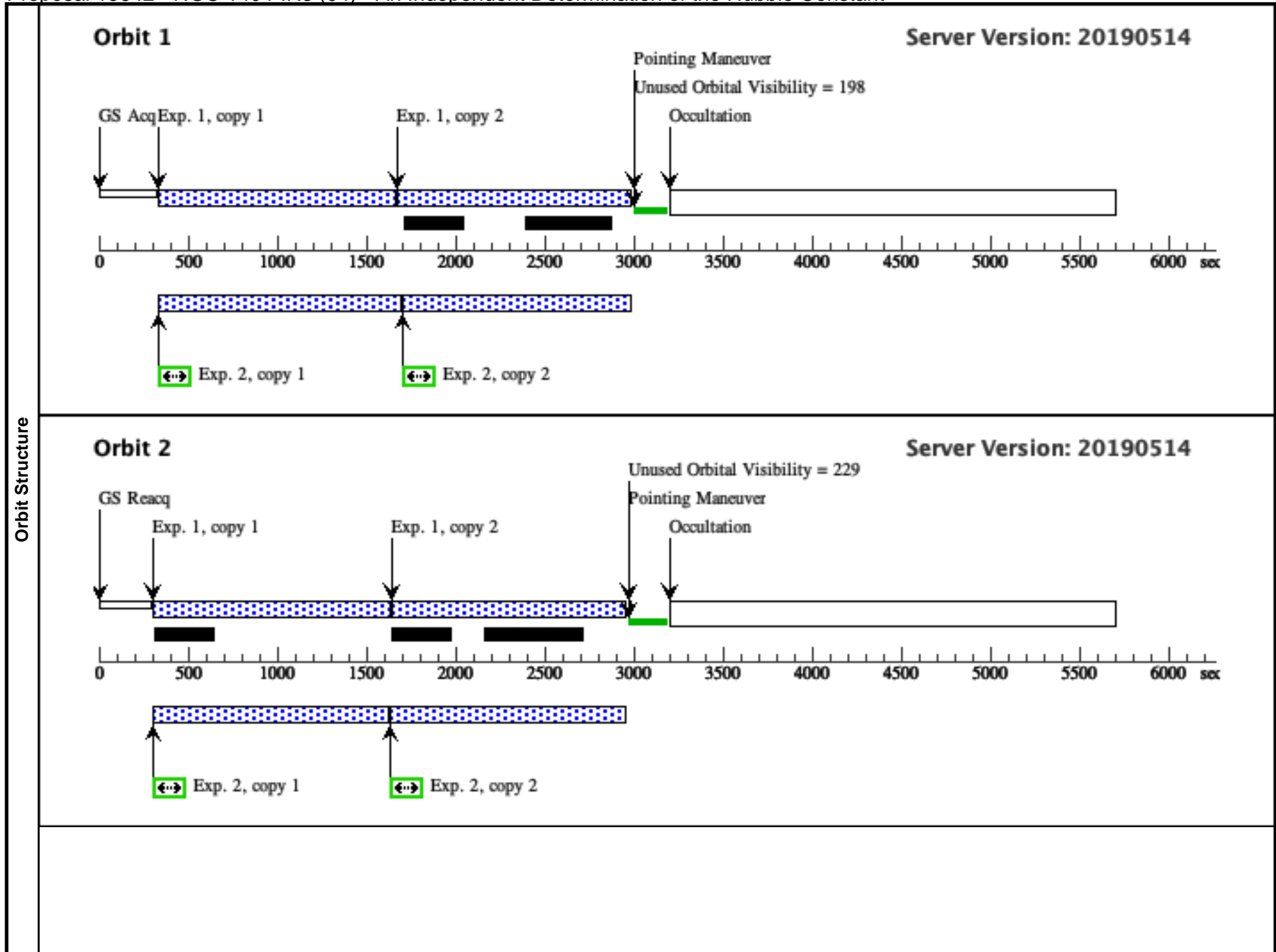
Server Version: 20190514



Proposal 15642 - NGC 1404-IR3 (04) - An Independent Determination of the Hubble Constant

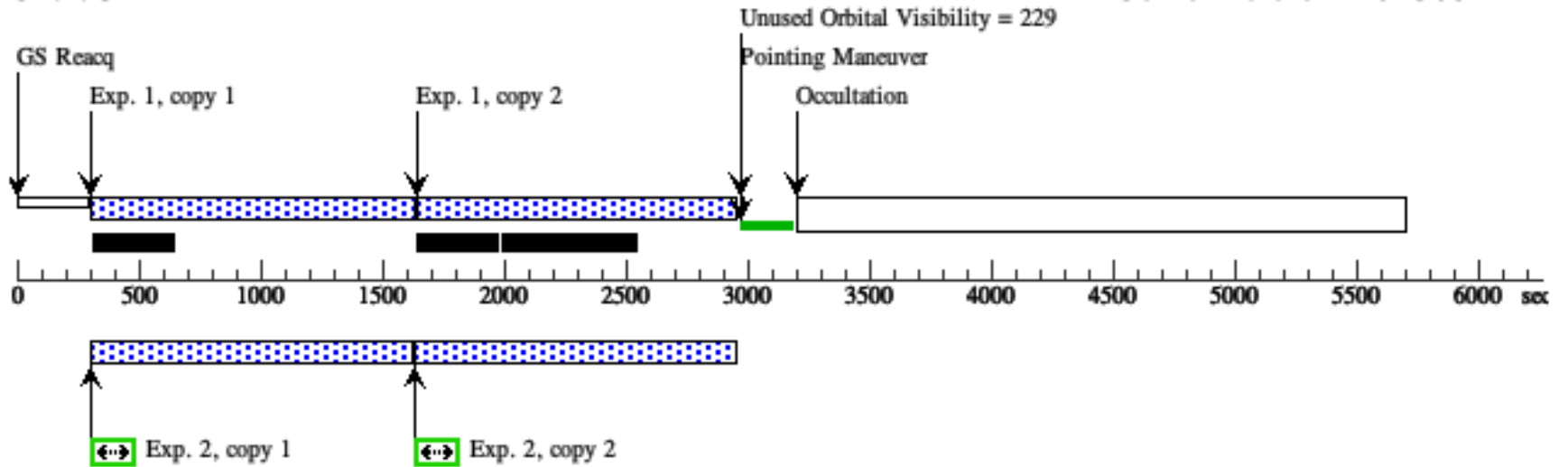
Tue Nov 26 23:01:06 GMT 2019

Visit	Proposal 15642, NGC 1404-IR3 (04), completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR, ACS/WFC Special Requirements: ORIENT 286D TO 288 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
	(1)	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		(1-2)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	NGC-1404	RA: 03 38 33.7700 (54.6407083d) Dec: -35 28 47.30 (-35.47981d) Equinox: J2000		V=26.0	Reference Frame: NED				
<i>Comments: This object was generated by the targetselector and retrieved from the NED database.</i> Category=GALAXY Description=[DISK, HALO] Extended=YES										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(1) NGC-1404	WFC3/IR, MULTIACCUM, IR-FIX	F110W	NSAMP=14; SAMP-SEQ=SPAR S100			Pattern 1, Exps 1-2 in NGC 1404-IR3 (04) (1) Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in NGC 1404-IR3 (04)	1302.93649 Secs X 2 (10423.492 Secs) [==>(Pattern 1, Copy 1)] [==>(Pattern 1, Copy 2)] [==>(Pattern 2, Copy 1)] [==>(Pattern 2, Copy 2)] [==>(Pattern 3, Copy 1)] [==>(Pattern 3, Copy 2)] [==>(Pattern 4, Copy 1)] [==>(Pattern 4, Copy 2)]	[1] [2] [3] [4]
2	(1) NGC-1404	ACS/WFC, ACCUM, WFC	F606W				Pattern 1, Exps 1-2 in NGC 1404-IR3 (04) (1) Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in NGC 1404-IR3 (04)	1180 Secs X 2 (9486 Secs) [==>1155.0 Secs (Pattern 1, Copy 1)] [==>1155.0 Secs (Pattern 1, Copy 2)] [==>1196.0 Secs (Pattern 2, Copy 1)] [==>1196.0 Secs (Pattern 2, Copy 2)] [==>1196.0 Secs (Pattern 3, Copy 1)] [==>1196.0 Secs (Pattern 3, Copy 2)] [==>1196.0 Secs (Pattern 4, Copy 1)] [==>1196.0 Secs (Pattern 4, Copy 2)]	[1] [2] [3] [4]	



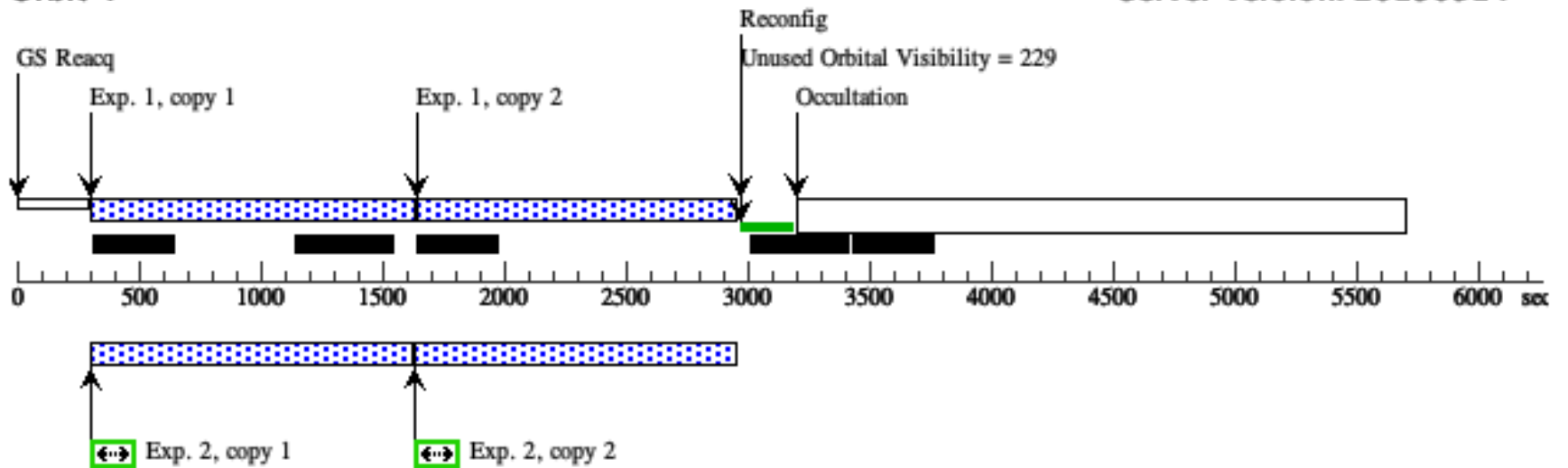
Orbit 3

Server Version: 20190514



Orbit 4

Server Version: 20190514



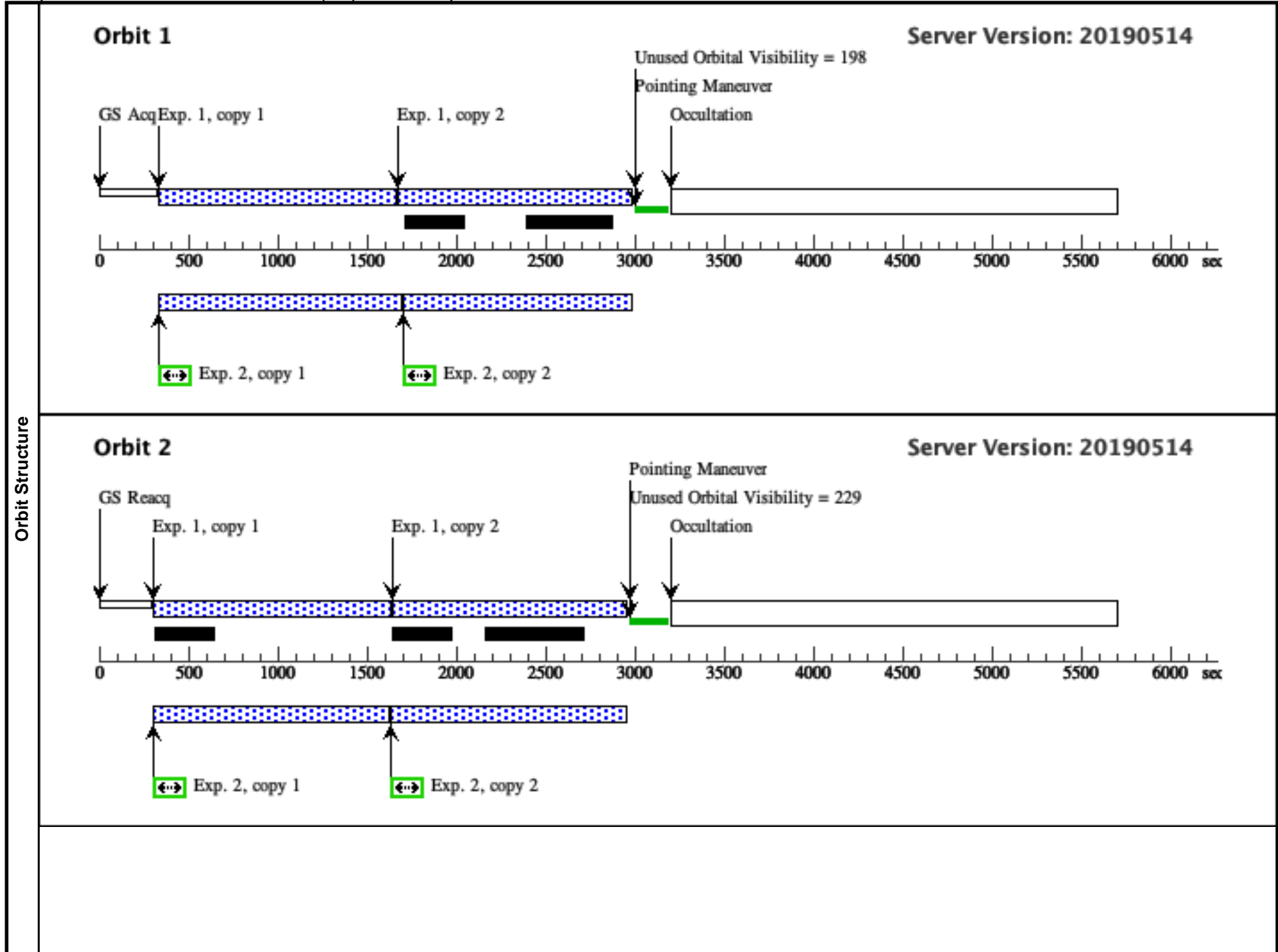
Proposal 15642 - NGC 1404-IR4 (05) - An Independent Determination of the Hubble Constant

Tue Nov 26 23:01:06 GMT 2019

Visit	Proposal 15642, NGC 1404-IR4 (05), completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR, ACS/WFC Special Requirements: ORIENT 286D TO 288 D					
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	(1)	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		(1-2)	
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	NGC-1404	RA: 03 38 33.7700 (54.6407083d) Dec: -35 28 47.30 (-35.47981d) Equinox: J2000		V=26.0	Reference Frame: NED
	Comments: This object was generated by the targetselector and retrieved from the NED database. Category=GALAXY Description=[DISK, HALO] Extended=YES					

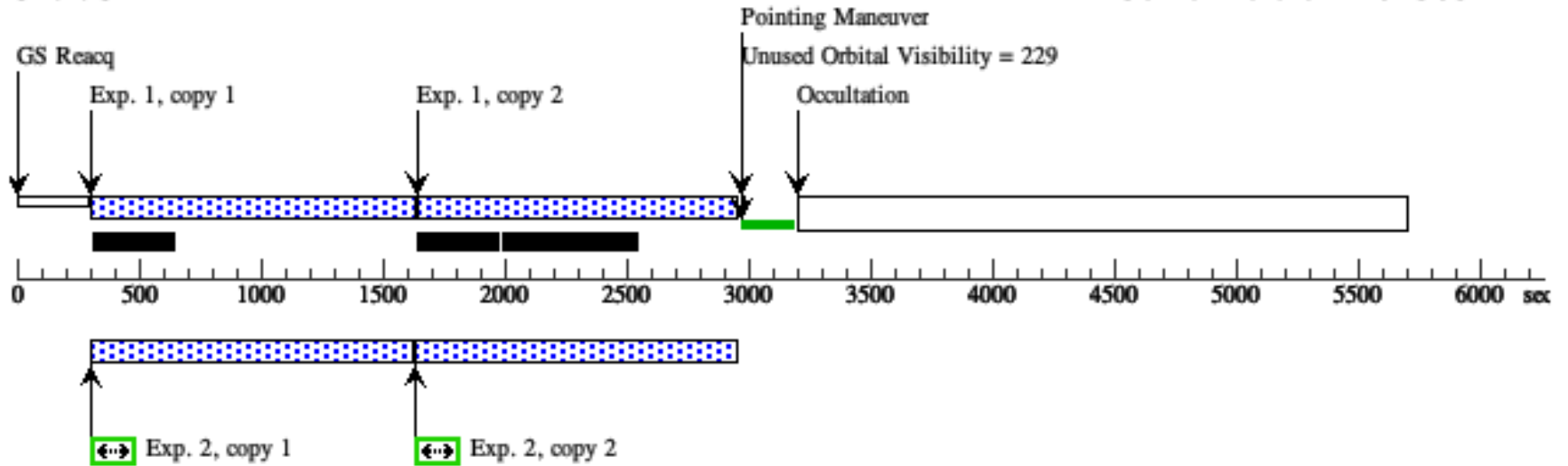
Proposal 15642 - NGC 1404-IR4 (05) - An Independent Determination of the Hubble Constant

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
Exposures	1	(1) NGC-1404	WFC3/IR, MULTIACCUM, IR-FIX	F110W	NSAMP=14; SAMP-SEQ=SPAR S100		Pattern 1, Exps 1-2 in NGC 1404-IR4 (05) (1) Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in NGC 1404-IR4 (05)	1302.93649 Secs X 2 (10423.492 Secs) [==>(Pattern 1, Copy 1)] [==>(Pattern 1, Copy 2)] [==>(Pattern 2, Copy 1)] [==>(Pattern 2, Copy 2)] [==>(Pattern 3, Copy 1)] [==>(Pattern 3, Copy 2)] [==>(Pattern 4, Copy 1)] [==>(Pattern 4, Copy 2)]	[1] [2] [3] [4]
	2	(1) NGC-1404	ACS/WFC, ACCUM, WFC	F606W			Pattern 1, Exps 1-2 in NGC 1404-IR4 (05) (1) Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in NGC 1404-IR4 (05)	1200 Secs X 2 (9486 Secs) [==>1155.0 Secs (Pattern 1, Copy 1)] [==>1155.0 Secs (Pattern 1, Copy 2)] [==>1196.0 Secs (Pattern 2, Copy 1)] [==>1196.0 Secs (Pattern 2, Copy 2)] [==>1196.0 Secs (Pattern 3, Copy 1)] [==>1196.0 Secs (Pattern 3, Copy 2)] [==>1196.0 Secs (Pattern 4, Copy 1)] [==>1196.0 Secs (Pattern 4, Copy 2)]	[1] [2] [3] [4]
	3	(1) NGC-1404	WFC3/IR, MULTIACCUM, IR-FIX	F110W	NSAMP=12; SAMP-SEQ=SPAR S100		Prime + Parallel Group 3-4 in NGC 1404-IR4 (05)	1102.935844 Secs X 2 (2205.872 Secs) [==>(Copy 1)] [==>(Copy 2)]	[5]
	4	(1) NGC-1404	ACS/WFC, ACCUM, WFC	F606W			Prime + Parallel Group 3-4 in NGC 1404-IR4 (05)	1180 Secs X 2 (1992 Secs) [==>996.0 Secs (Copy 1)] [==>996.0 Secs (Copy 2)]	[5]



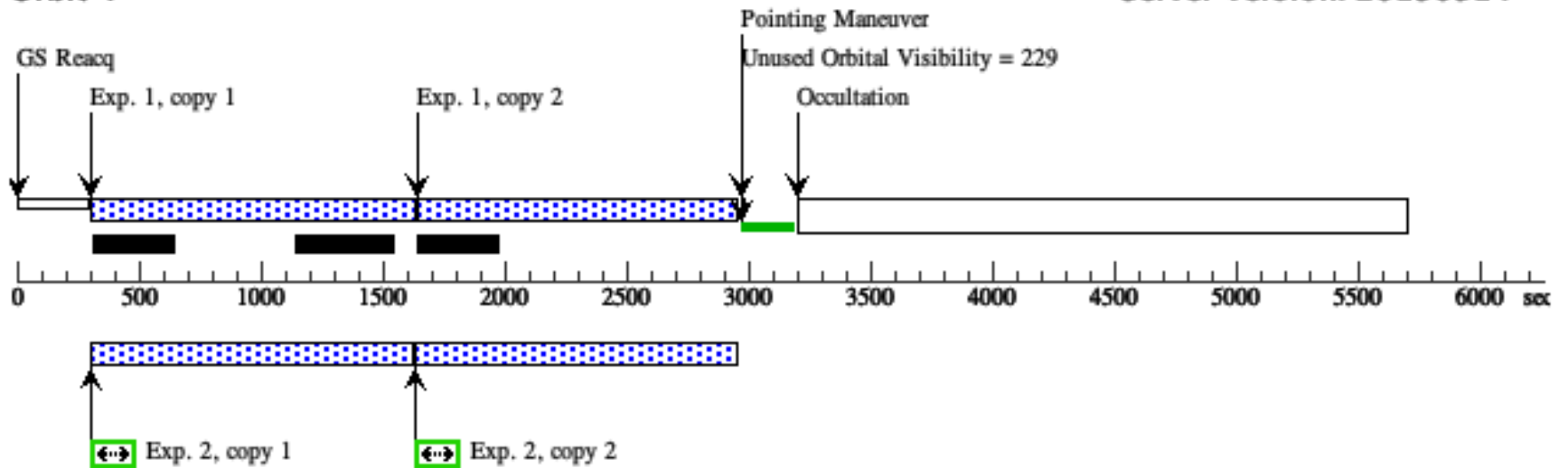
Orbit 3

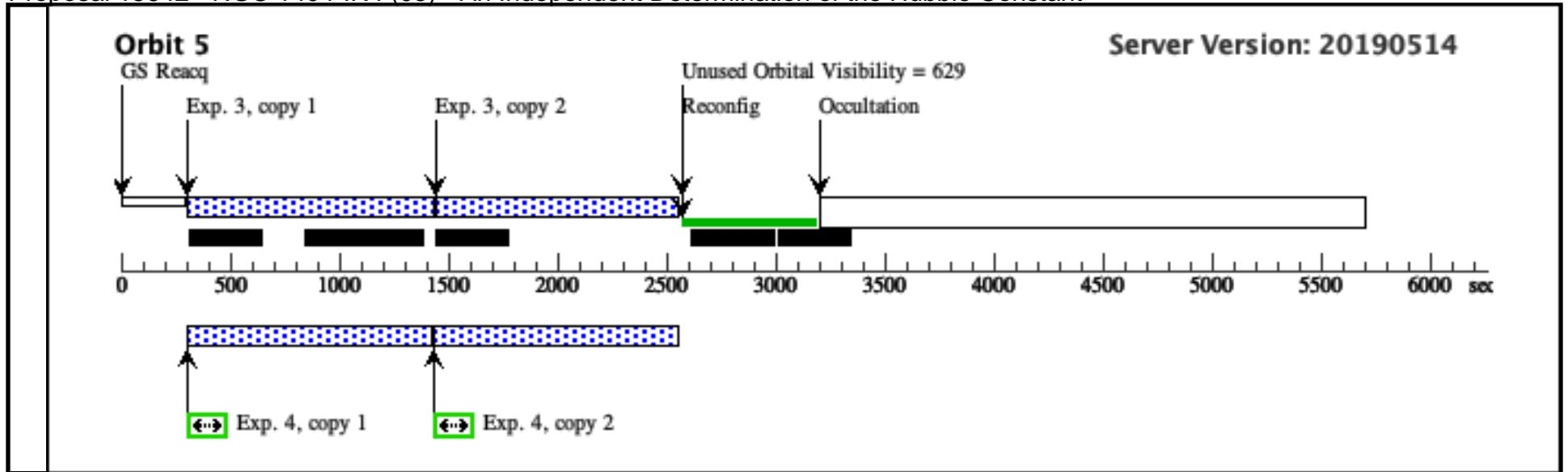
Server Version: 20190514



Orbit 4

Server Version: 20190514





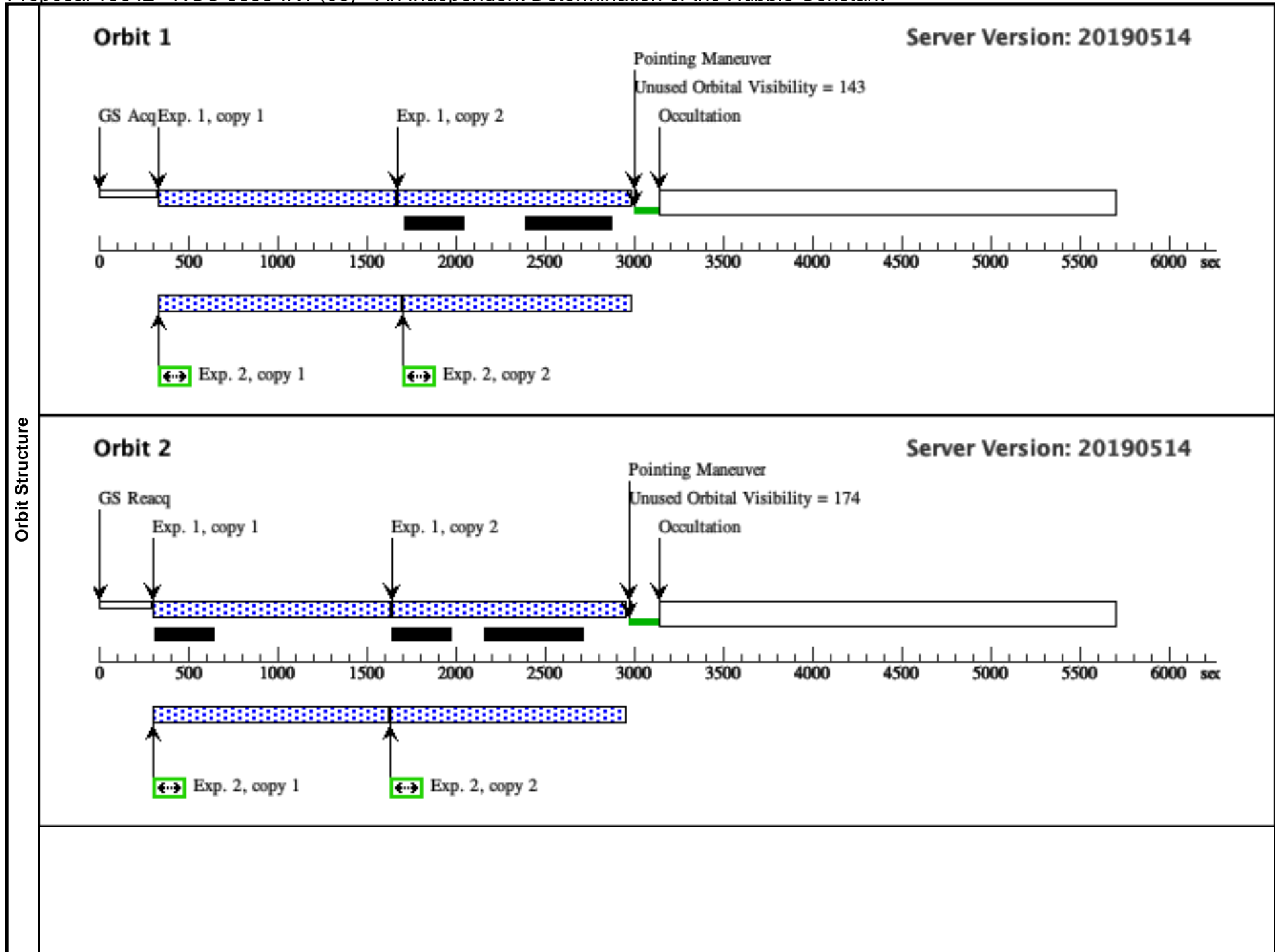
Proposal 15642 - NGC 5338-IR1 (06) - An Independent Determination of the Hubble Constant

Tue Nov 26 23:01:07 GMT 2019

Visit	Proposal 15642, NGC 5338-IR1 (06), scheduling Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR, ACS/WFC Special Requirements: ORIENT 255D TO 265 D					
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(3)		Pattern Type=WFC3-IR-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.636 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false		(3-4)	
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(2)	NGC-5338	RA: 13 53 31.0000 (208.3791667d) Dec: +05 12 43.00 (5.21194d) Equinox: J2000		V=26.0	Reference Frame: NED
<i>Comments: This object was generated by the targetselector and retrieved from the NED database.</i> Category=GALAXY Description=[DISK, HALO] Extended=YES						

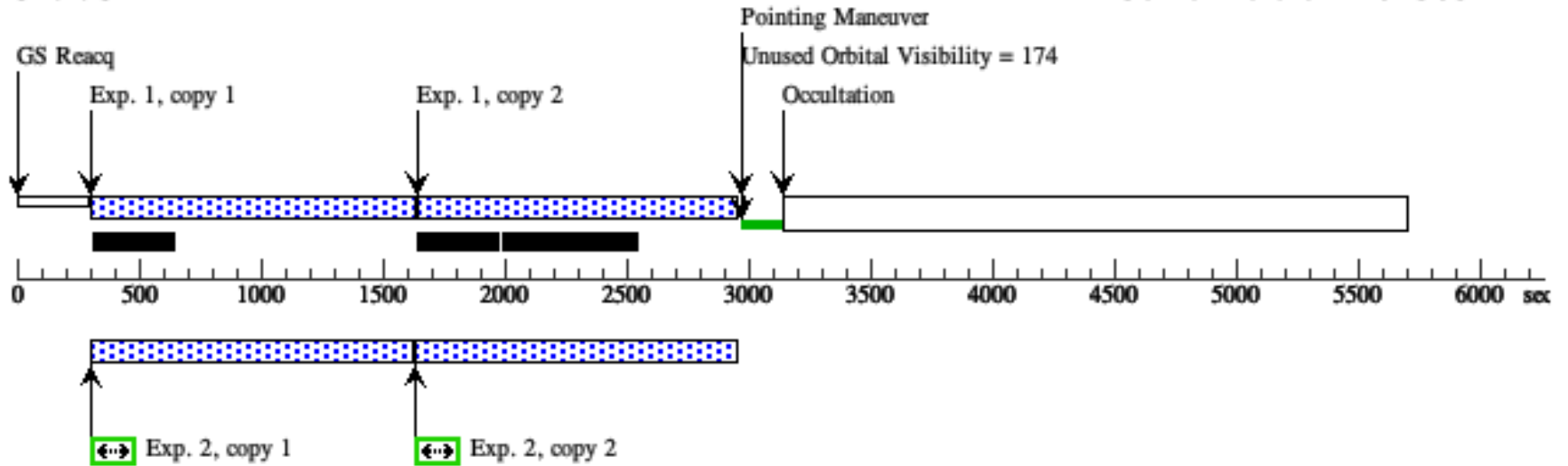
Proposal 15642 - NGC 5338-IR1 (06) - An Independent Determination of the Hubble Constant

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Exposures	1	(2) NGC-5338	WFC3/IR, MULTIACCUM, IR-FIX	F110W	NSAMP=14; SAMP-SEQ=SPAR S100		Pattern 1, Exps 1-2 in NGC 5338-IR1 (06) (1)	1302.93649 Secs X 2 (10423.492 Secs)	
							Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in NGC 5338-IR1 (06)	[==>(Pattern 1, Copy 1)]	[1]
								[==>(Pattern 1, Copy 2)]	
								[==>(Pattern 2, Copy 1)]	[2]
								[==>(Pattern 2, Copy 2)]	
								[==>(Pattern 3, Copy 1)]	[3]
								[==>(Pattern 3, Copy 2)]	
								[==>(Pattern 4, Copy 1)]	[4]
		[==>(Pattern 4, Copy 2)]							
	2	(2) NGC-5338	ACS/WFC, ACCUM, WFC	F606W			Pattern 1, Exps 1-2 in NGC 5338-IR1 (06) (1)	1180 Secs X 2 (9486 Secs)	
							Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in NGC 5338-IR1 (06)	[==>1155.0 Secs (Pattern 1, Copy 1)]	[1]
								[==>1155.0 Secs (Pattern 1, Copy 2)]	
							[==>1196.0 Secs (Pattern 2, Copy 1)]	[2]	
							[==>1196.0 Secs (Pattern 2, Copy 2)]		
							[==>1196.0 Secs (Pattern 3, Copy 1)]	[3]	
							[==>1196.0 Secs (Pattern 3, Copy 2)]		
							[==>1196.0 Secs (Pattern 4, Copy 1)]	[4]	
	[==>1196.0 Secs (Pattern 4, Copy 2)]								
3	(2) NGC-5338	WFC3/IR, MULTIACCUM, IR-FIX	F110W	NSAMP=14; SAMP-SEQ=SPAR S100		Pattern 3, Exps 3-4 in NGC 5338-IR1 (06) (3)	1302.93649 Secs X 2 (5211.746 Secs)		
						Prime + Parallel Group 3-4 in Pattern 3, Exps 3-4 in NGC 5338-IR1 (06)	[==>(Pattern 1, Copy 1)]	[5]	
							[==>(Pattern 1, Copy 2)]		
							[==>(Pattern 2, Copy 1)]	[6]	
	[==>(Pattern 2, Copy 2)]								
4	(2) NGC-5338	ACS/WFC, ACCUM, WFC	F606W			Pattern 3, Exps 3-4 in NGC 5338-IR1 (06) (3)	1200 Secs X 2 (4784 Secs)		
						Prime + Parallel Group 3-4 in Pattern 3, Exps 3-4 in NGC 5338-IR1 (06)	[==>1196.0 Secs (Pattern 1, Copy 1)]	[5]	
							[==>1196.0 Secs (Pattern 1, Copy 2)]		
							[==>1196.0 Secs (Pattern 2, Copy 1)]	[6]	
	[==>1196.0 Secs (Pattern 2, Copy 2)]								



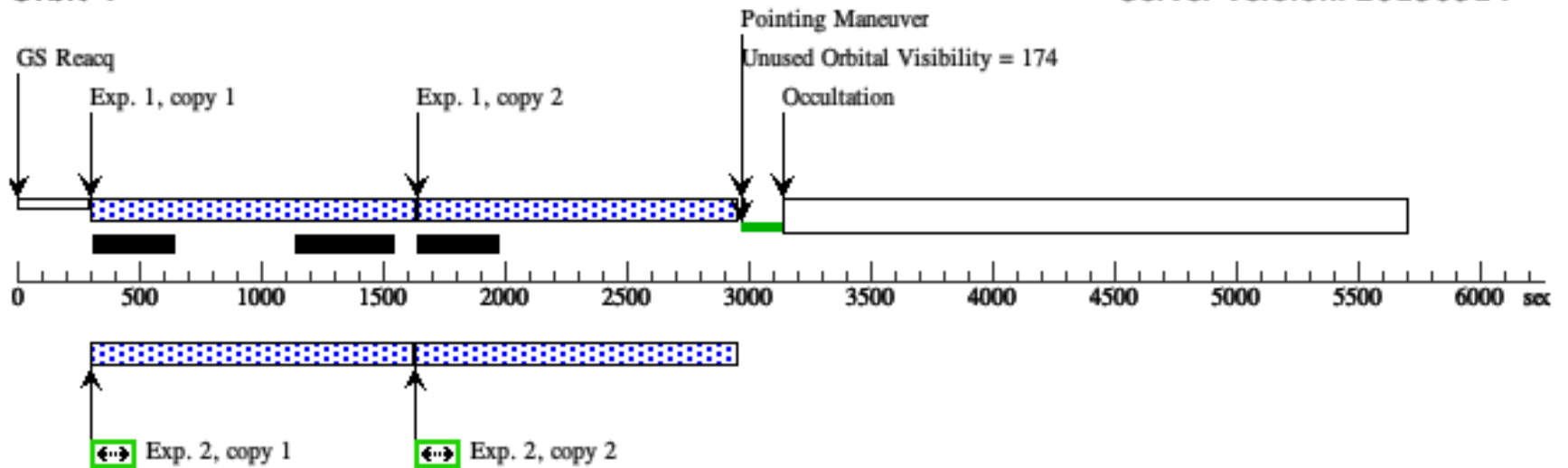
Orbit 3

Server Version: 20190514



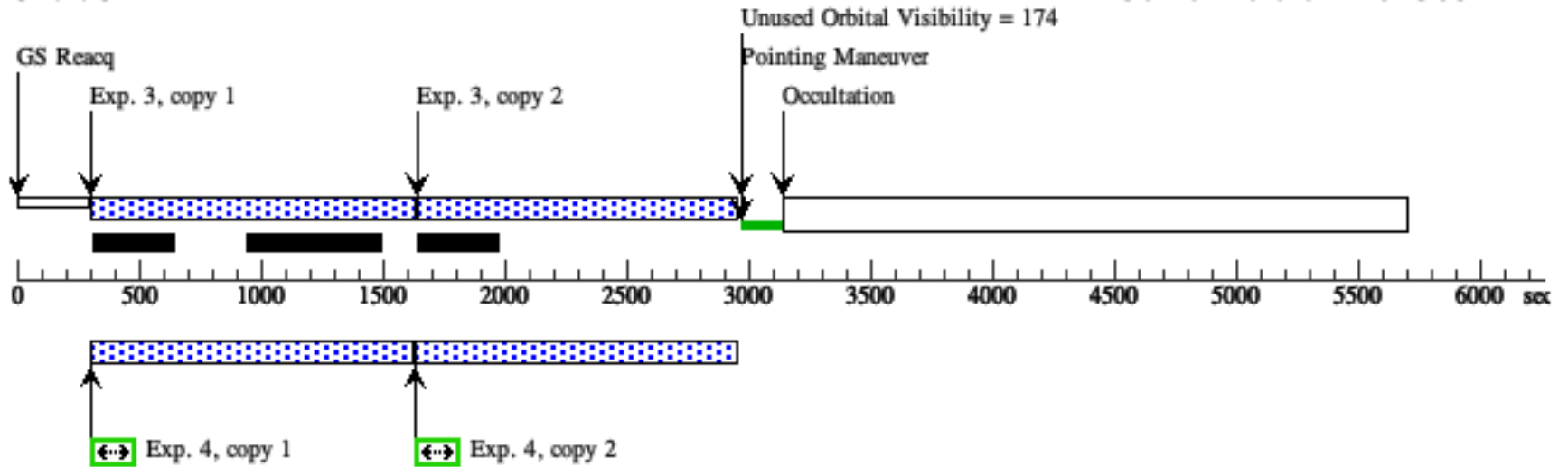
Orbit 4

Server Version: 20190514



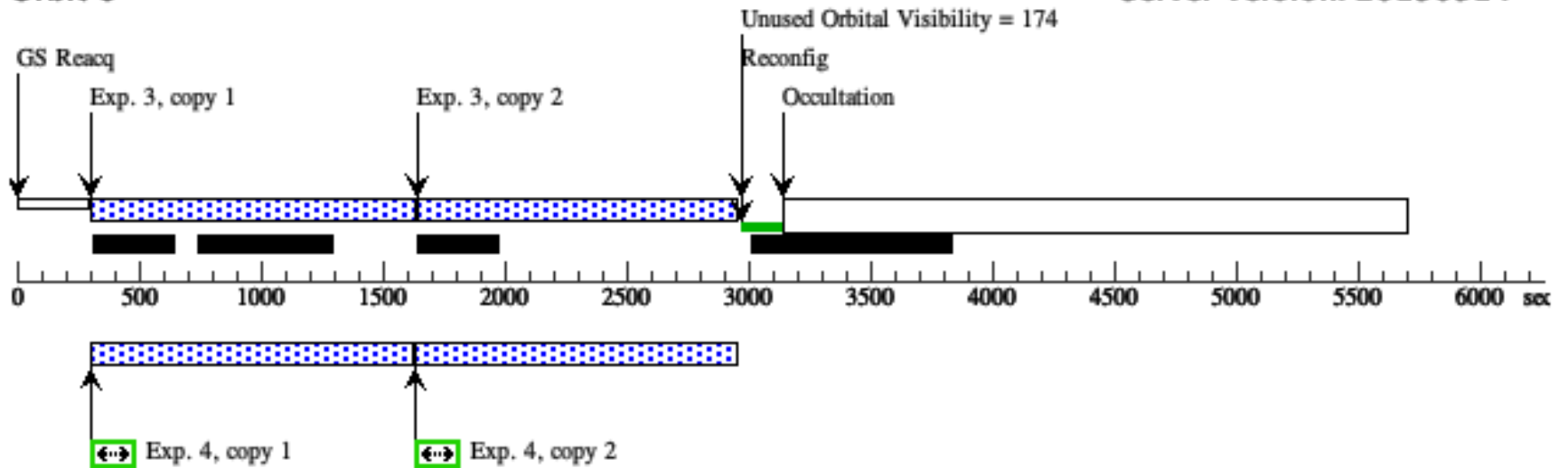
Orbit 5

Server Version: 20190514



Orbit 6

Server Version: 20190514



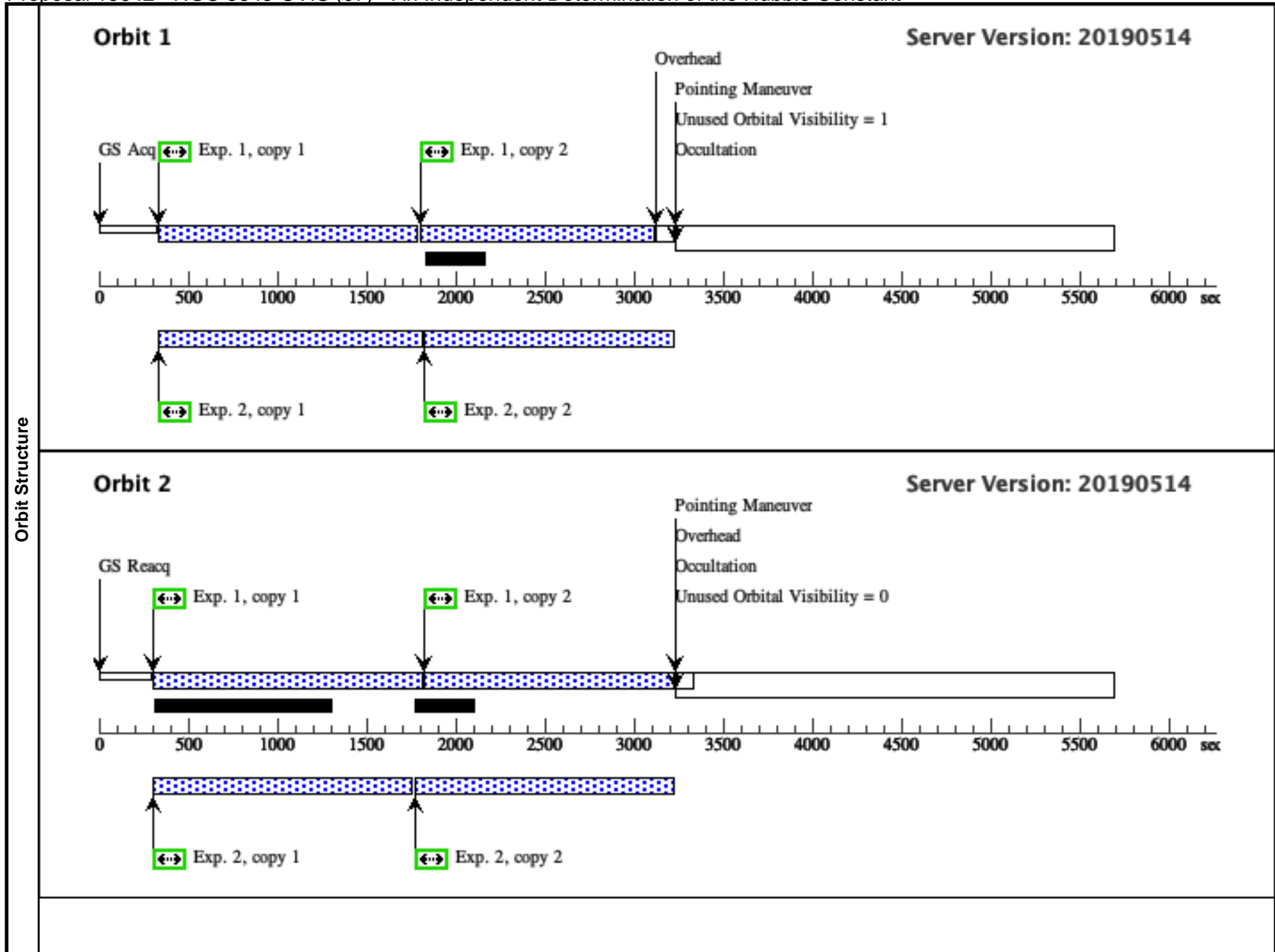
Proposal 15642 - NGC 5643-UVIS (07) - An Independent Determination of the Hubble Constant

Tue Nov 26 23:01:07 GMT 2019

Visit	Proposal 15642, NGC 5643-UVIS (07), completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: ORIENT 118D TO 120 D					
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures	
	(2)	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		(1-2)	
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(3)	NGC-5643	RA: 14 32 42.3400 (218.1764167d) Dec: -44 12 37.00 (-44.21028d) Equinox: J2000		V=25.0	Reference Frame: NED
	Comments: This object was generated by the targetselector and retrieved from the NED database. Category=GALAXY Description=[DISK, HALO] Extended=YES					

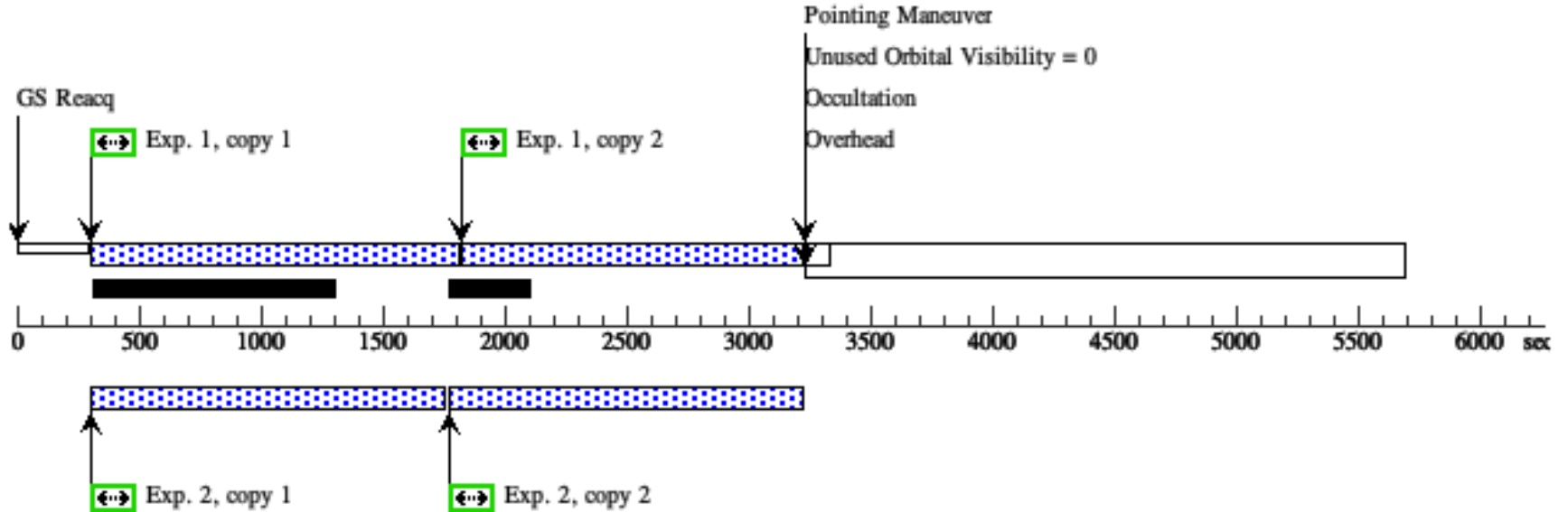
Proposal 15642 - NGC 5643-UVIS (07) - An Independent Determination of the Hubble Constant

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
Exposures	1	(3) NGC-5643	WFC3/UVIS, ACCUM, UVIS-IR-FIX	F814W			Pattern 2, Exps 1-2 in NGC 5643-UVIS (07) (2) Prime + Parallel Group 1-2 in Pattern 2, Exps 1-2 in NGC 5643-UVIS (07)	1330 Secs X 2 (11004 Secs)	
								[==>1308.0 Secs (Pattern 1, Copy 1)]	[1]
								[==>1308.0 Secs (Pattern 1, Copy 2)]	
								[==>1398.0 Secs (Pattern 2, Copy 1)]	[2]
								[==>1398.0 Secs (Pattern 2, Copy 2)]	
								[==>1398.0 Secs (Pattern 3, Copy 1)]	[3]
								[==>1398.0 Secs (Pattern 3, Copy 2)]	
								[==>1398.0 Secs (Pattern 4, Copy 1)]	[4]
								[==>1398.0 Secs (Pattern 4, Copy 2)]	
								2	(3) NGC-5643
[==>1273.0 Secs (Pattern 1, Copy 1)]	[1]								
[==>1273.0 Secs (Pattern 1, Copy 2)]									
[==>1330.0 Secs (Pattern 2, Copy 1)]	[2]								
[==>1330.0 Secs (Pattern 2, Copy 2)]									
[==>1330.0 Secs (Pattern 3, Copy 1)]	[3]								
[==>1330.0 Secs (Pattern 3, Copy 2)]									
[==>1330.0 Secs (Pattern 4, Copy 1)]	[4]								
[==>1330.0 Secs (Pattern 4, Copy 2)]									



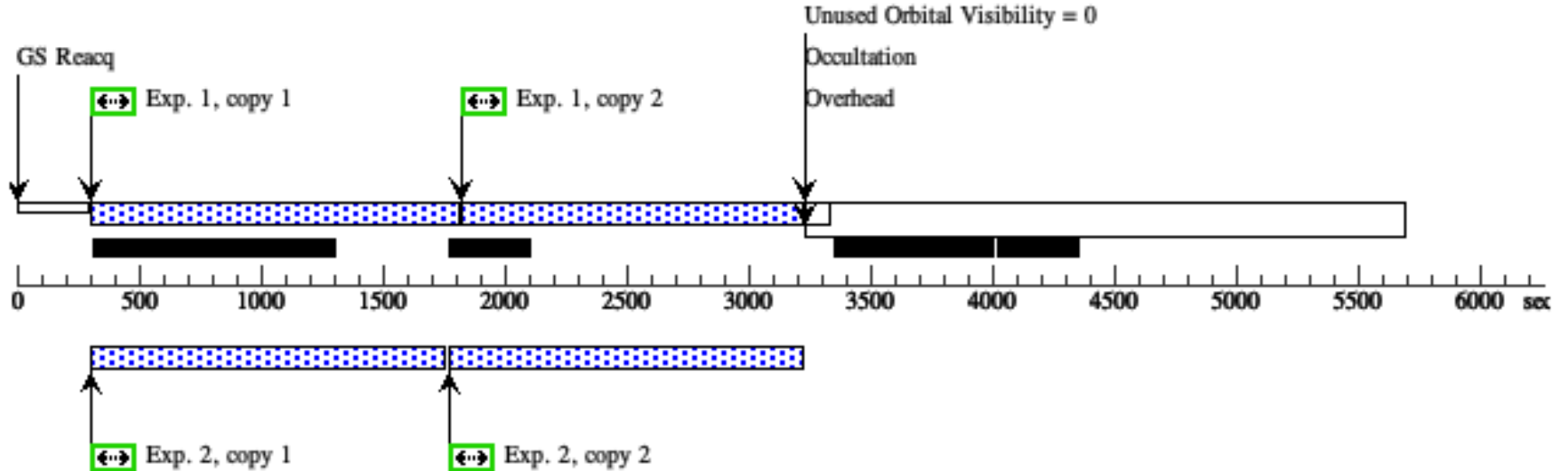
Orbit 3

Server Version: 20190514



Orbit 4

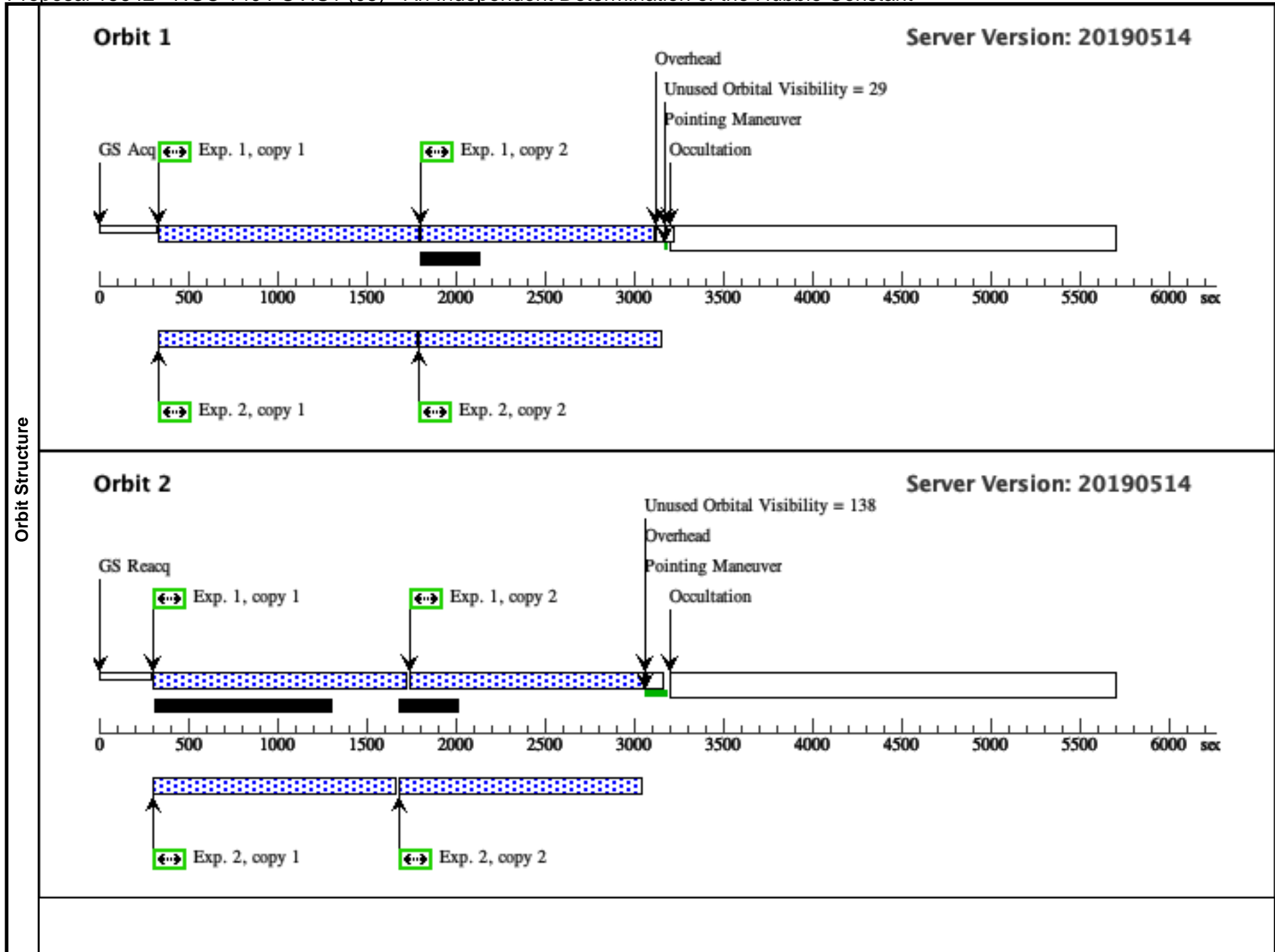
Server Version: 20190514



Proposal 15642 - NGC 1404-UVIS1 (08) - An Independent Determination of the Hubble Constant

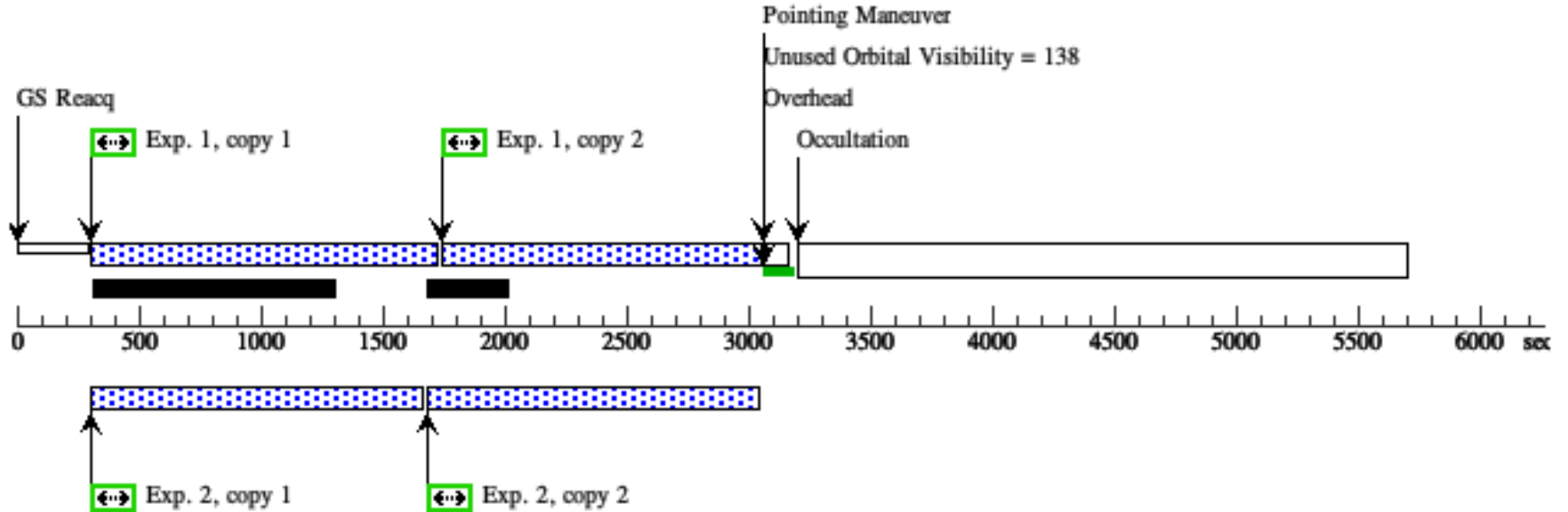
Tue Nov 26 23:01:07 GMT 2019

Visit	Proposal 15642, NGC 1404-UVIS1 (08), completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: ORIENT 286D TO 288 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
	(2)	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		(1-2)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	NGC-1404	RA: 03 38 33.7700 (54.6407083d) Dec: -35 28 47.30 (-35.47981d) Equinox: J2000		V=26.0	Reference Frame: NED				
<i>Comments: This object was generated by the targetselector and retrieved from the NED database.</i> Category=GALAXY Description=[DISK, HALO] Extended=YES										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(1) NGC-1404	WFC3/UVIS, ACCUM, UVIS-IR-FIX	F814W				Pattern 2, Exps 1-2 in NGC 1404-UVIS1 (08) (2) Prime + Parallel Group 1-2 in Pattern 2, Exps 1-2 in NGC 1404-UVIS1 (08)	1310 Secs X 2 (10480 Secs) [==>(Pattern 1, Copy 1)] [==>(Pattern 1, Copy 2)] [==>(Pattern 2, Copy 1)] [==>(Pattern 2, Copy 2)] [==>(Pattern 3, Copy 1)] [==>(Pattern 3, Copy 2)] [==>(Pattern 4, Copy 1)] [==>(Pattern 4, Copy 2)]
2		(1) NGC-1404	ACS/WFC, ACCUM, WFC	F814W				Pattern 2, Exps 1-2 in NGC 1404-UVIS1 (08) (2) Prime + Parallel Group 1-2 in Pattern 2, Exps 1-2 in NGC 1404-UVIS1 (08)	1240 Secs X 2 (9920 Secs) [==>(Pattern 1, Copy 1)] [==>(Pattern 1, Copy 2)] [==>(Pattern 2, Copy 1)] [==>(Pattern 2, Copy 2)] [==>(Pattern 3, Copy 1)] [==>(Pattern 3, Copy 2)] [==>(Pattern 4, Copy 1)] [==>(Pattern 4, Copy 2)]	[1] [2] [3] [4]



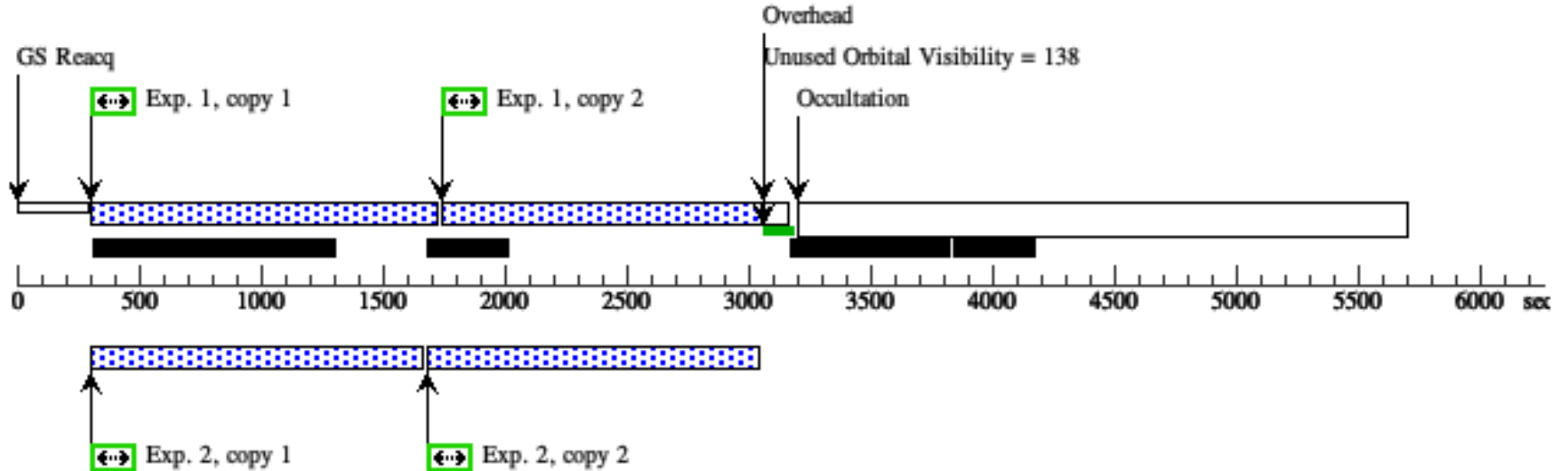
Orbit 3

Server Version: 20190514



Orbit 4

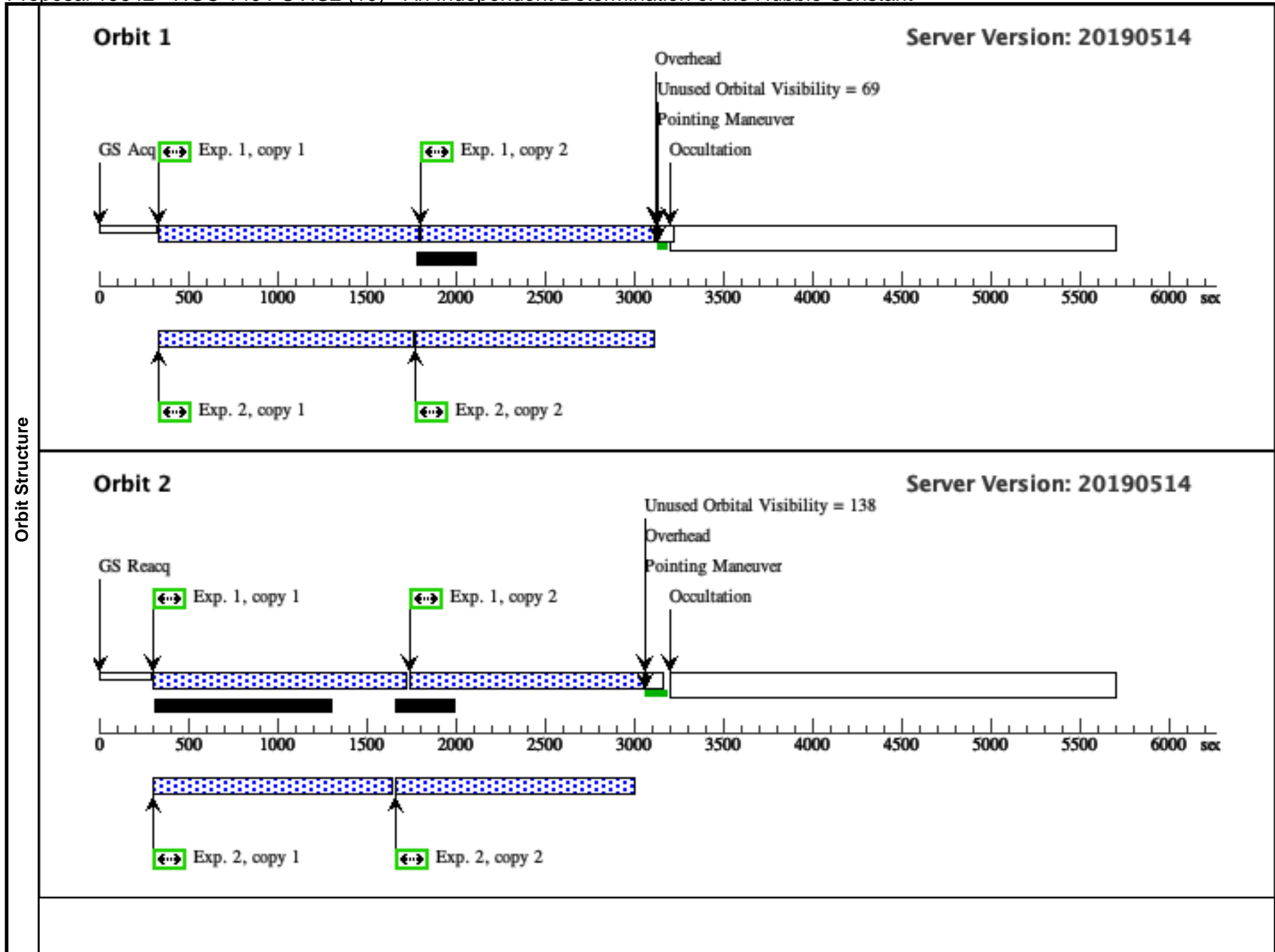
Server Version: 20190514



Proposal 15642 - NGC 1404-UVIS2 (10) - An Independent Determination of the Hubble Constant

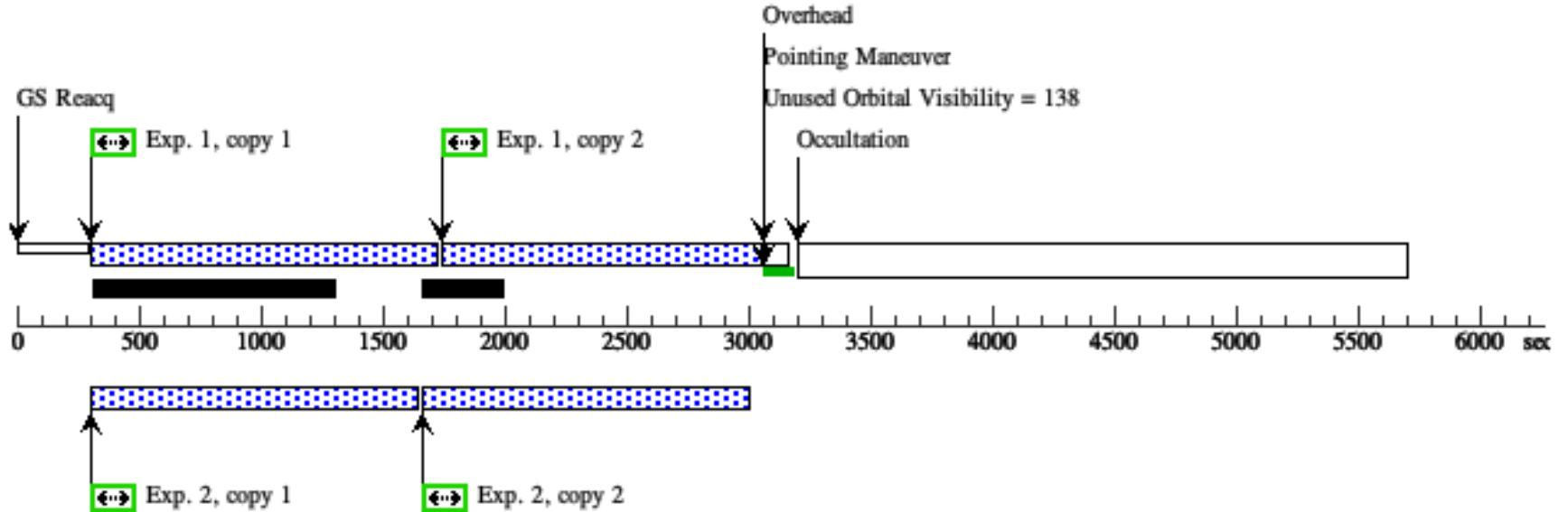
Tue Nov 26 23:01:07 GMT 2019

Visit	Proposal 15642, NGC 1404-UVIS2 (10), completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: ORIENT 286D TO 288 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
	(2)	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		(1-2)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	NGC-1404	RA: 03 38 33.7700 (54.6407083d) Dec: -35 28 47.30 (-35.47981d) Equinox: J2000		V=26.0	Reference Frame: NED				
<i>Comments: This object was generated by the targetselector and retrieved from the NED database.</i> Category=GALAXY Description=[DISK, HALO] Extended=YES										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(1) NGC-1404		WFC3/UVIS, ACCUM, UVIS-IR-FIX	F814W				Pattern 2, Exps 1-2 in NGC 1404-UVIS2 (10) (2) Prime + Parallel Group 1-2 in Pattern 2, Exps 1-2 in NGC 1404-UVIS2 (10)	1310 Secs X 2 (10480 Secs) [==>(Pattern 1, Copy 1)] [==>(Pattern 1, Copy 2)] [==>(Pattern 2, Copy 1)] [==>(Pattern 2, Copy 2)] [==>(Pattern 3, Copy 1)] [==>(Pattern 3, Copy 2)] [==>(Pattern 4, Copy 1)] [==>(Pattern 4, Copy 2)]
2	(1) NGC-1404		ACS/WFC, ACCUM, WFC	F814W				Pattern 2, Exps 1-2 in NGC 1404-UVIS2 (10) (2) Prime + Parallel Group 1-2 in Pattern 2, Exps 1-2 in NGC 1404-UVIS2 (10)	1220 Secs X 2 (9760 Secs) [==>(Pattern 1, Copy 1)] [==>(Pattern 1, Copy 2)] [==>(Pattern 2, Copy 1)] [==>(Pattern 2, Copy 2)] [==>(Pattern 3, Copy 1)] [==>(Pattern 3, Copy 2)] [==>(Pattern 4, Copy 1)] [==>(Pattern 4, Copy 2)]	[1] [2] [3] [4]



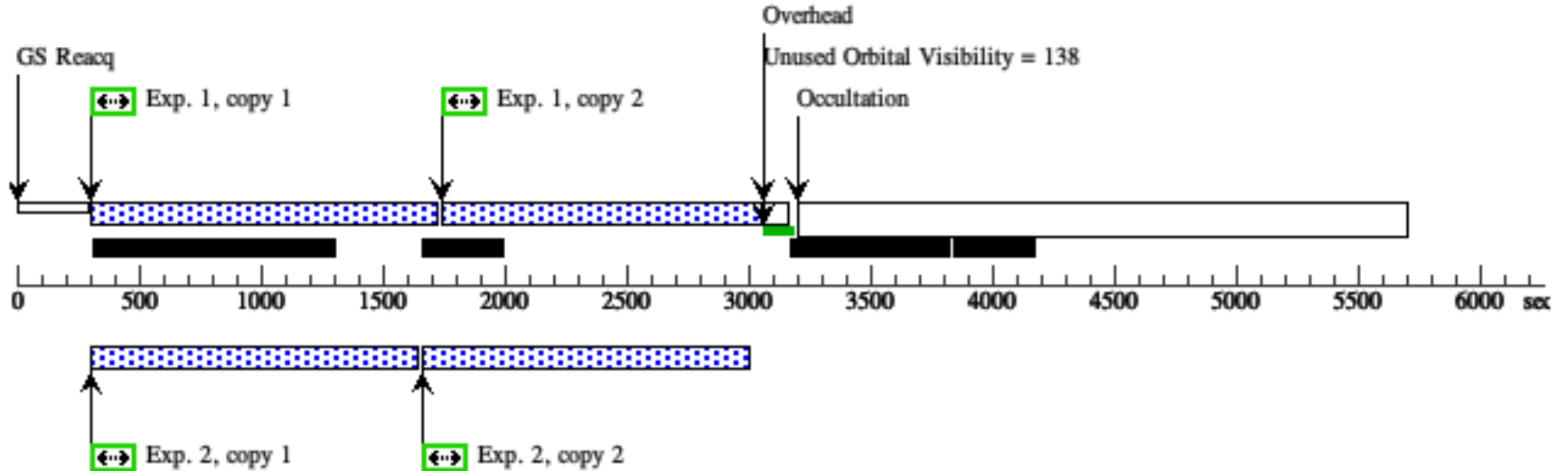
Orbit 3

Server Version: 20190514



Orbit 4

Server Version: 20190514



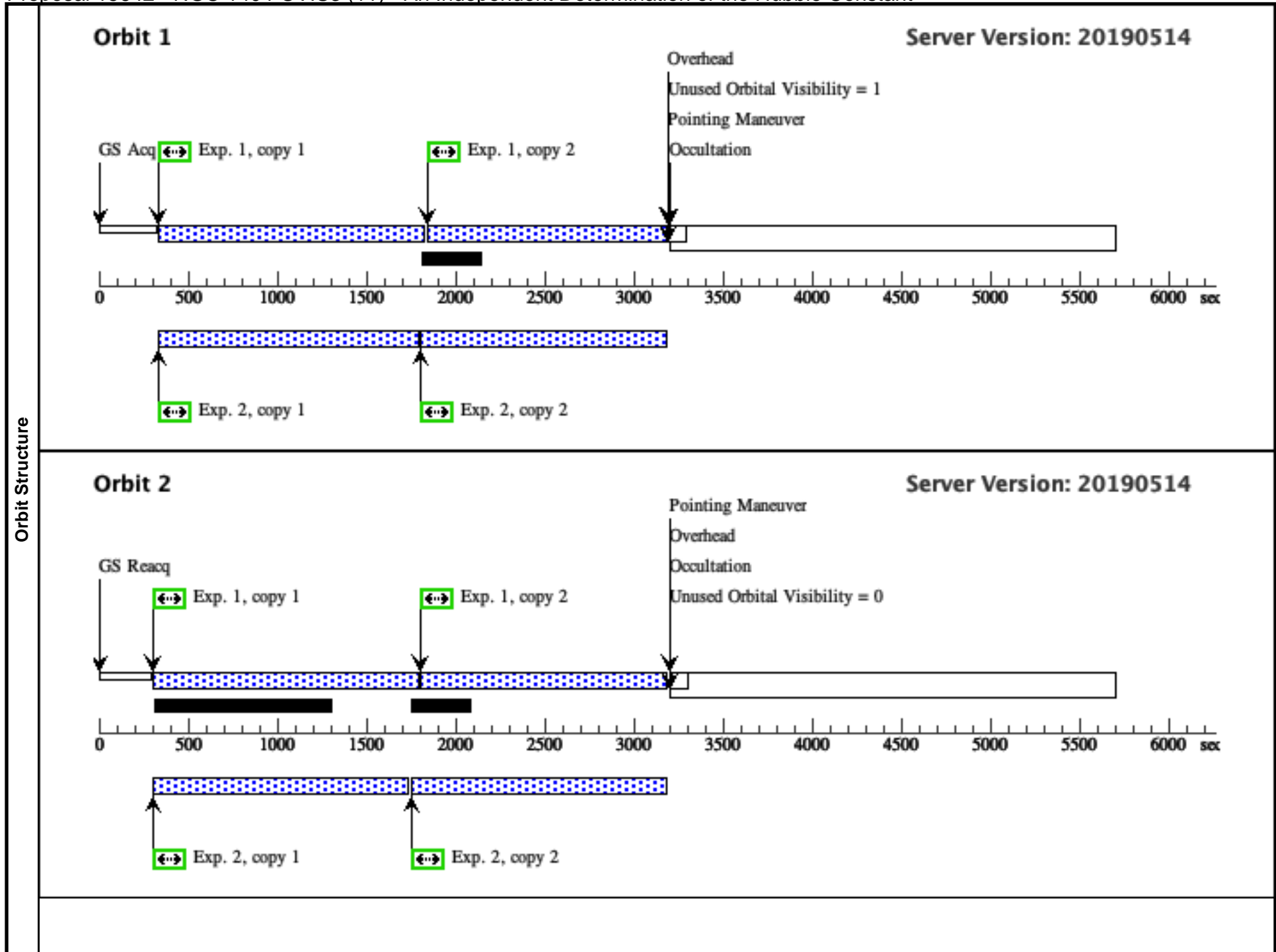
Proposal 15642 - NGC 1404-UVIS3 (11) - An Independent Determination of the Hubble Constant

Tue Nov 26 23:01:07 GMT 2019

Visit	Proposal 15642, NGC 1404-UVIS3 (11), completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: ORIENT 286D TO 288 D					
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures	
	(2)	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		(1-2)	
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	NGC-1404	RA: 03 38 33.7700 (54.6407083d) Dec: -35 28 47.30 (-35.47981d) Equinox: J2000		V=26.0	Reference Frame: NED
	Comments: This object was generated by the targetselector and retrieved from the NED database. Category=GALAXY Description=[DISK, HALO] Extended=YES					

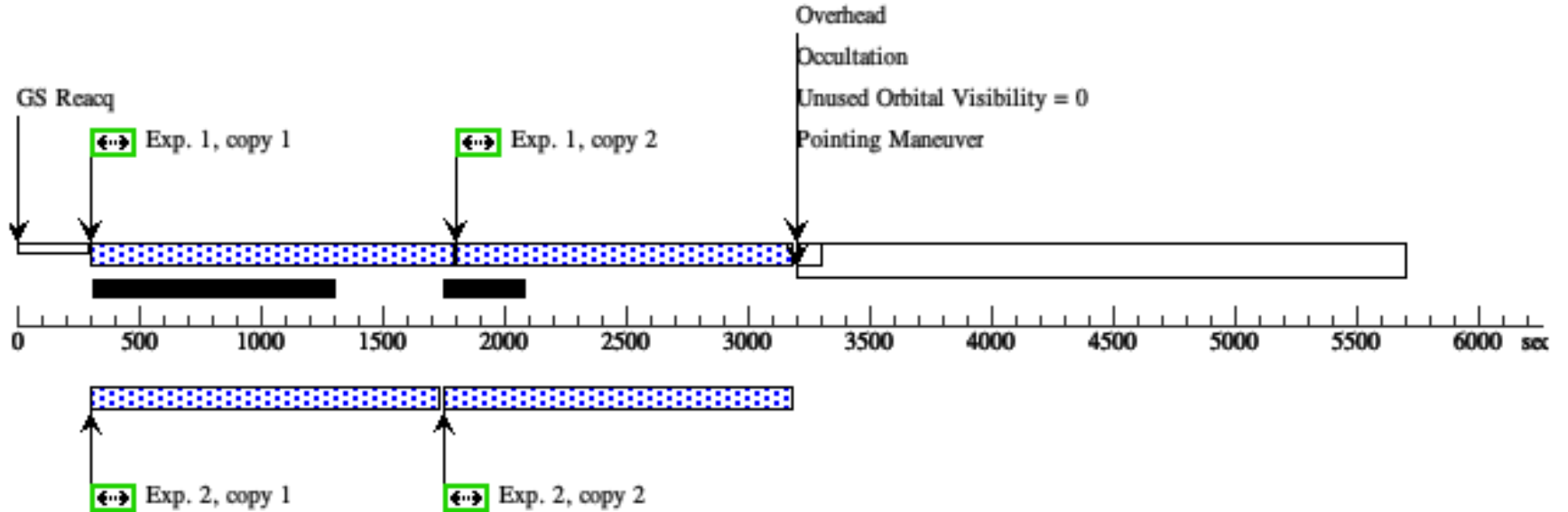
Proposal 15642 - NGC 1404-UVIS3 (11) - An Independent Determination of the Hubble Constant

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
Exposures	1	(1) NGC-1404	WFC3/UVIS, ACCUM, UVIS-IR-FIX	F814W			Pattern 2, Exps 1-2 in NGC 1404-UVIS3 (11) (2) Prime + Parallel Group 1-2 in Pattern 2, Exps 1-2 in NGC 1404-UVIS3 (11)	1370 Secs X 2 (10968 Secs)	
								[==>1347.0 Secs (Pattern 1, Copy 1)]	[1]
								[==>1347.0 Secs (Pattern 1, Copy 2)]	
								[==>1379.0 Secs (Pattern 2, Copy 1)]	[2]
								[==>1379.0 Secs (Pattern 2, Copy 2)]	
								[==>1379.0 Secs (Pattern 3, Copy 1)]	[3]
								[==>1379.0 Secs (Pattern 3, Copy 2)]	
								[==>1379.0 Secs (Pattern 4, Copy 1)]	[4]
								[==>1379.0 Secs (Pattern 4, Copy 2)]	
	2	(1) NGC-1404	ACS/WFC, ACCUM, WFC	F814W				Pattern 2, Exps 1-2 in NGC 1404-UVIS3 (11) (2) Prime + Parallel Group 1-2 in Pattern 2, Exps 1-2 in NGC 1404-UVIS3 (11)	1260 Secs X 2 (10374 Secs)
[==>1254.0 Secs (Pattern 1, Copy 1)]									[1]
[==>1254.0 Secs (Pattern 1, Copy 2)]									
[==>1311.0 Secs (Pattern 2, Copy 1)]									[2]
[==>1311.0 Secs (Pattern 2, Copy 2)]									
							[==>1311.0 Secs (Pattern 3, Copy 1)]	[3]	
							[==>1311.0 Secs (Pattern 3, Copy 2)]		
							[==>1311.0 Secs (Pattern 4, Copy 1)]	[4]	
							[==>1311.0 Secs (Pattern 4, Copy 2)]		



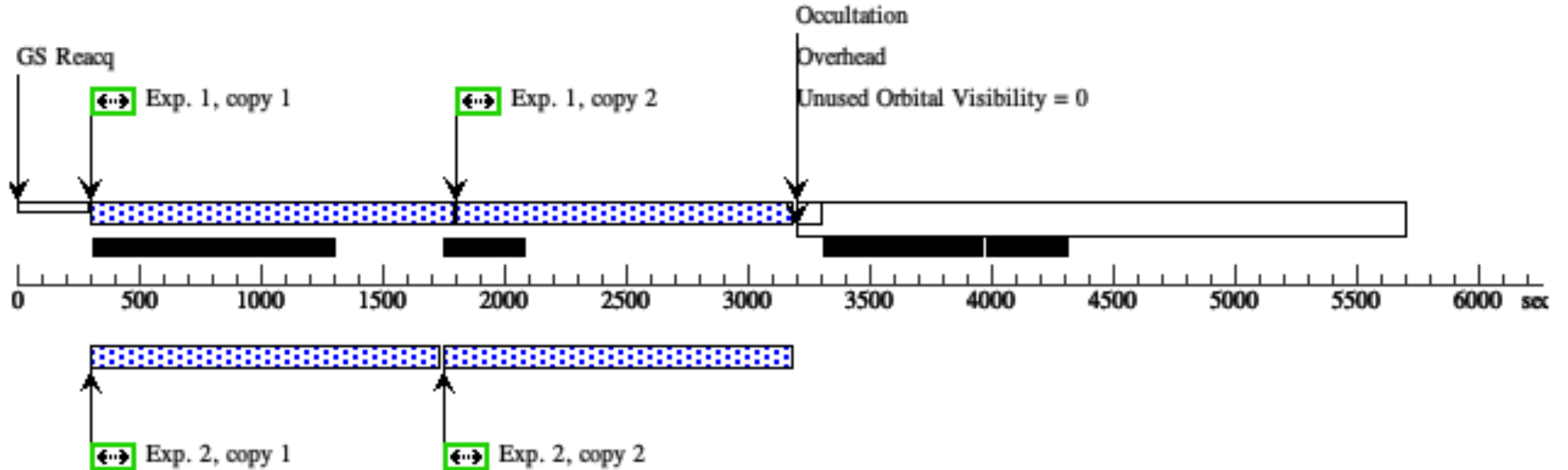
Orbit 3

Server Version: 20190514



Orbit 4

Server Version: 20190514



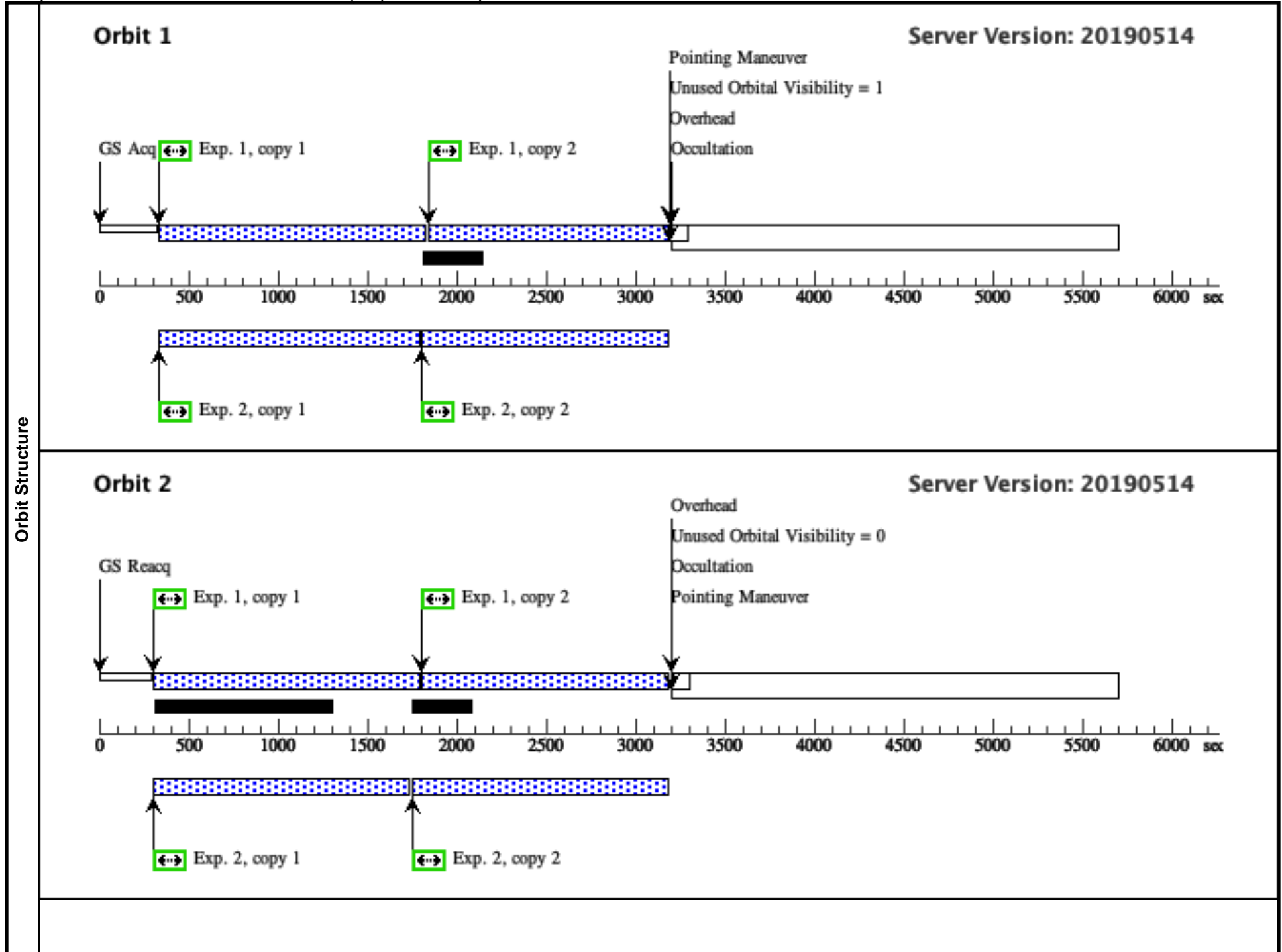
Proposal 15642 - NGC 1404-UVIS4 (12) - An Independent Determination of the Hubble Constant

Tue Nov 26 23:01:07 GMT 2019

Visit	Proposal 15642, NGC 1404-UVIS4 (12), completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: ORIENT 286D TO 288 D					
	Patterns	# (2)	Primary Pattern Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Secondary Pattern Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false	Exposures (1-2)	
Fixed Targets	# (1)	Name NGC-1404	Target Coordinates RA: 03 38 33.7700 (54.6407083d) Dec: -35 28 47.30 (-35.47981d) Equinox: J2000	Targ. Coord. Corrections	Fluxes V=26.0	Miscellaneous Reference Frame: NED
Comments: This object was generated by the targetselector and retrieved from the NED database. Category=GALAXY Description=[DISK, HALO] Extended=YES						

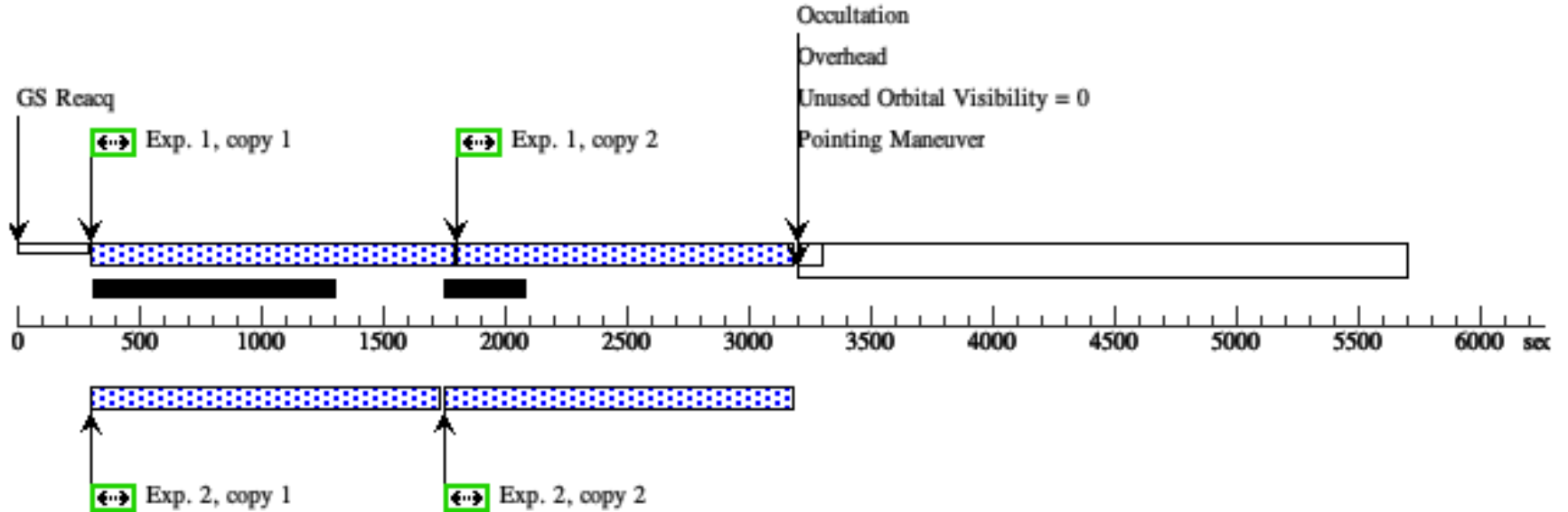
Proposal 15642 - NGC 1404-UVIS4 (12) - An Independent Determination of the Hubble Constant

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
Exposures	1	(1) NGC-1404	WFC3/UVIS, ACCUM, UVIS-IR-FIX	F814W			Pattern 2, Exps 1-2 in NGC 1404-UVIS4 (12) (2) Prime + Parallel Group 1-2 in Pattern 2, Exps 1-2 in NGC 1404-UVIS4 (12)	1370 Secs X 2 (10968 Secs)		
								[==>1347.0 Secs (Pattern 1, Copy 1)]	[1]	
								[==>1347.0 Secs (Pattern 1, Copy 2)]		
								[==>1379.0 Secs (Pattern 2, Copy 1)]	[2]	
								[==>1379.0 Secs (Pattern 2, Copy 2)]		
								[==>1379.0 Secs (Pattern 3, Copy 1)]	[3]	
	[==>1379.0 Secs (Pattern 3, Copy 2)]									
	[==>1379.0 Secs (Pattern 4, Copy 1)]	[4]								
	[==>1379.0 Secs (Pattern 4, Copy 2)]									
	2	(1) NGC-1404	ACS/WFC, ACCUM, WFC	F814W				Pattern 2, Exps 1-2 in NGC 1404-UVIS4 (12) (2) Prime + Parallel Group 1-2 in Pattern 2, Exps 1-2 in NGC 1404-UVIS4 (12)	1260 Secs X 2 (10374 Secs)	
									[==>1254.0 Secs (Pattern 1, Copy 1)]	[1]
									[==>1254.0 Secs (Pattern 1, Copy 2)]	
[==>1311.0 Secs (Pattern 2, Copy 1)]									[2]	
[==>1311.0 Secs (Pattern 2, Copy 2)]										
[==>1311.0 Secs (Pattern 3, Copy 1)]									[3]	
[==>1311.0 Secs (Pattern 3, Copy 2)]										
[==>1311.0 Secs (Pattern 4, Copy 1)]	[4]									
[==>1311.0 Secs (Pattern 4, Copy 2)]										
3	(1) NGC-1404	WFC3/UVIS, ACCUM, UVIS-IR-FIX	F814W				Prime + Parallel Group 3-4 in NGC 1404-UVIS4 (12)	1370 Secs X 2 (2758 Secs)		
								[==>1379.0 Secs (Copy 1)]	[5]	
[==>1379.0 Secs (Copy 2)]										
4	(1) NGC-1404	ACS/WFC, ACCUM, WFC	F814W				Prime + Parallel Group 3-4 in NGC 1404-UVIS4 (12)	1260 Secs X 2 (2622 Secs)		
								[==>1311.0 Secs (Copy 1)]	[5]	
[==>1311.0 Secs (Copy 2)]										



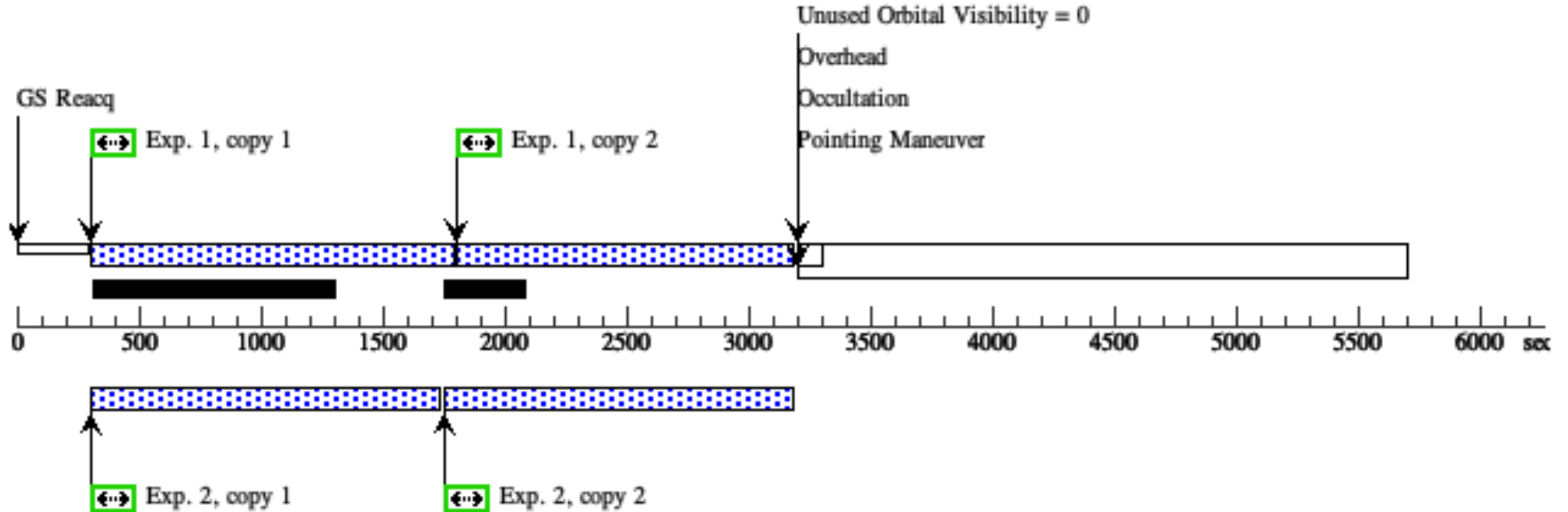
Orbit 3

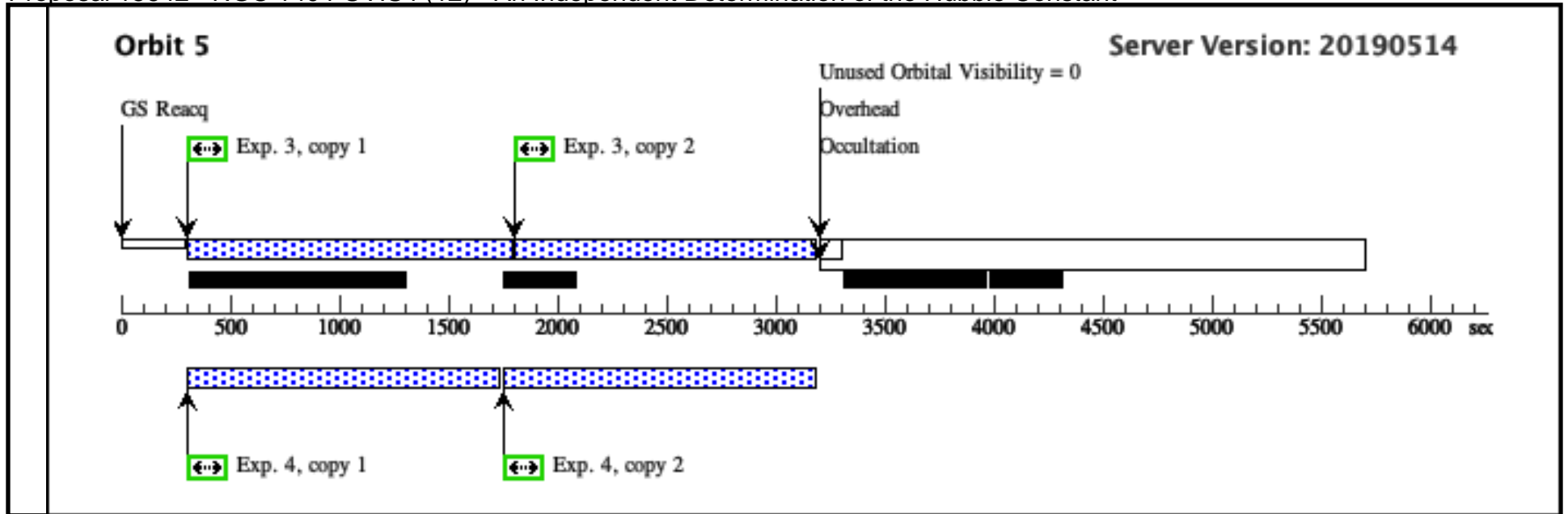
Server Version: 20190514



Orbit 4

Server Version: 20190514





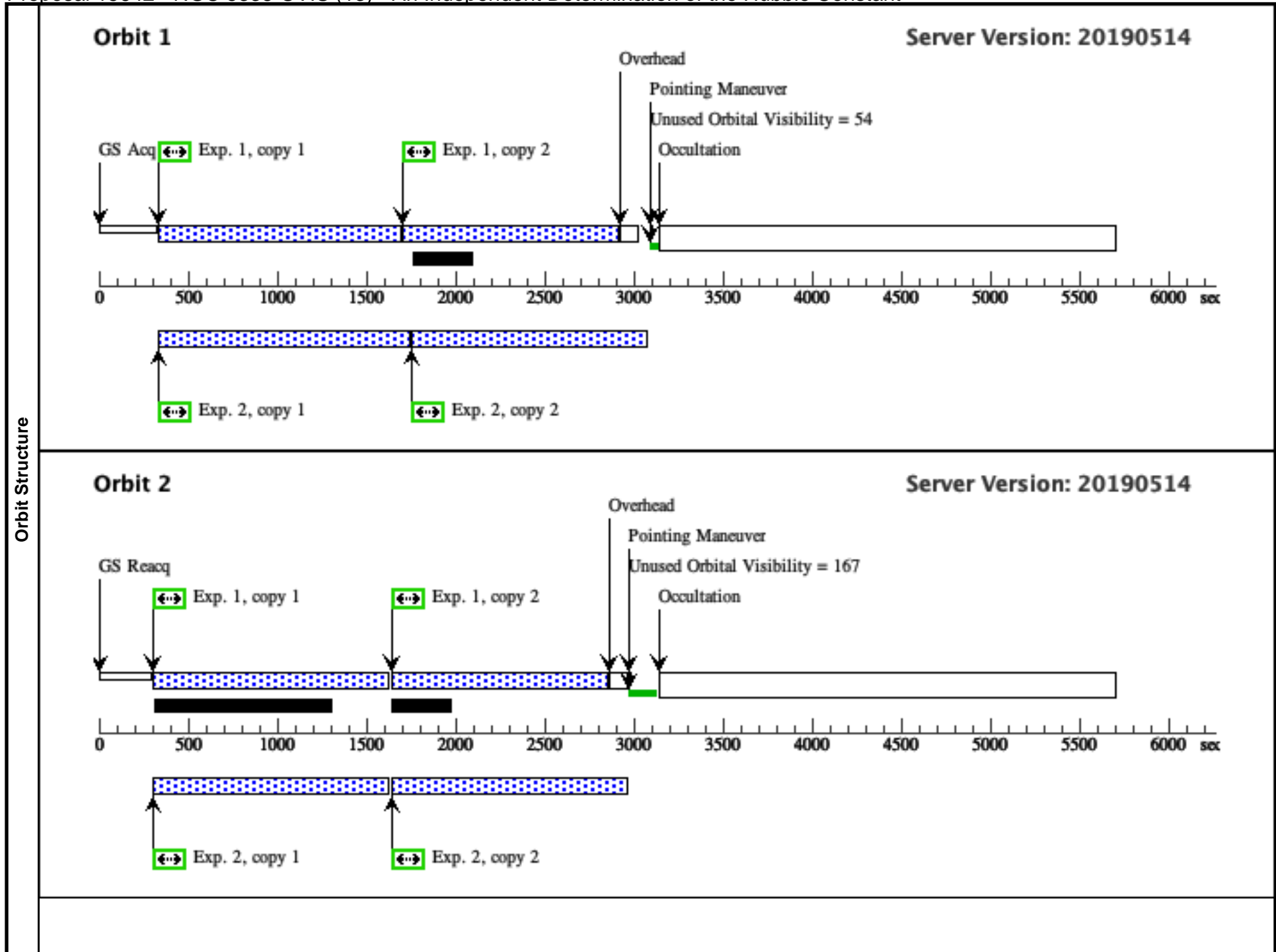
Proposal 15642 - NGC 5338-UVIS (13) - An Independent Determination of the Hubble Constant

Tue Nov 26 23:01:07 GMT 2019

Visit	Proposal 15642, NGC 5338-UVIS (13), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: ORIENT 255D TO 265 D					
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures	
(2)		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		(1-2)	
	(4)	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		(3-4)	
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(2)	NGC-5338	RA: 13 53 31.0000 (208.3791667d) Dec: +05 12 43.00 (5.21194d) Equinox: J2000		V=26.0	Reference Frame: NED
	<i>Comments: This object was generated by the targetselector and retrieved from the NED database.</i> Category=GALAXY Description=[DISK, HALO] Extended=YES					

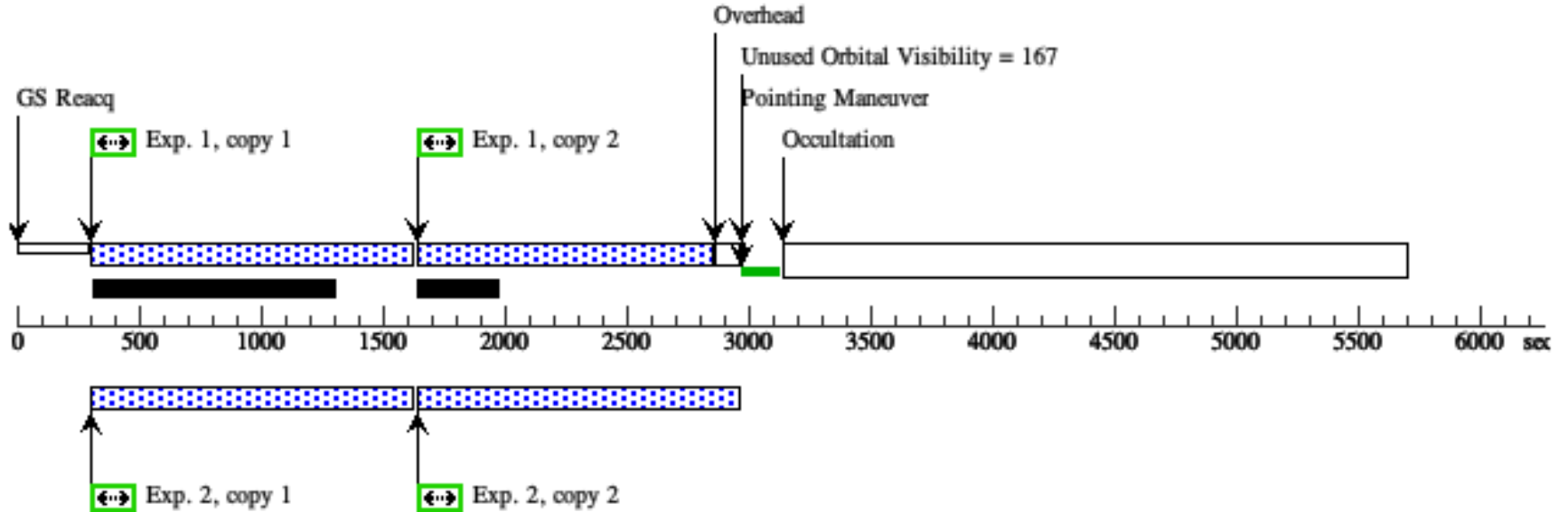
Proposal 15642 - NGC 5338-UVIS (13) - An Independent Determination of the Hubble Constant

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
	1		(2) NGC-5338	WFC3/UVIS, ACCUM, UVIS-IR-FIX	F814W				Pattern 2, Exps 1-2 in NGC 5338-UVIS (13) (2)	1210 Secs X 2 (9680 Secs)	
										[==>(Pattern 1, Copy 1)]	[1]
										[==>(Pattern 1, Copy 2)]	
									Prime + Parallel Group 1-2 in Pattern 2, Exps 1-2 in NGC 5338-UVIS (13)	[==>(Pattern 2, Copy 1)]	[2]
										[==>(Pattern 2, Copy 2)]	
										[==>(Pattern 3, Copy 1)]	[3]
										[==>(Pattern 3, Copy 2)]	
										[==>(Pattern 4, Copy 1)]	[4]
		[==>(Pattern 4, Copy 2)]									
2		(2) NGC-5338	ACS/WFC, ACCUM, WFC	F814W				Pattern 2, Exps 1-2 in NGC 5338-UVIS (13) (2)	1200 Secs X 2 (9600 Secs)		
									[==>(Pattern 1, Copy 1)]	[1]	
									[==>(Pattern 1, Copy 2)]		
								Prime + Parallel Group 1-2 in Pattern 2, Exps 1-2 in NGC 5338-UVIS (13)	[==>(Pattern 2, Copy 1)]	[2]	
									[==>(Pattern 2, Copy 2)]		
									[==>(Pattern 3, Copy 1)]	[3]	
									[==>(Pattern 3, Copy 2)]		
									[==>(Pattern 4, Copy 1)]	[4]	
	[==>(Pattern 4, Copy 2)]										
3		(2) NGC-5338	WFC3/UVIS, ACCUM, UVIS-IR-FIX	F814W				Pattern 4, Exps 3-4 in NGC 5338-UVIS (13) (4)	1260 Secs X 2 (5040 Secs)		
									[==>(Pattern 1, Copy 1)]	[5]	
									[==>(Pattern 1, Copy 2)]		
								Prime + Parallel Group 3-4 in Pattern 4, Exps 3-4 in NGC 5338-UVIS (13)	[==>(Pattern 2, Copy 1)]	[6]	
	[==>(Pattern 2, Copy 2)]										
4		(2) NGC-5338	ACS/WFC, ACCUM, WFC	F814W				Pattern 4, Exps 3-4 in NGC 5338-UVIS (13) (4)	1250 Secs X 2 (5000 Secs)		
									[==>(Pattern 1, Copy 1)]	[5]	
									[==>(Pattern 1, Copy 2)]		
								Prime + Parallel Group 3-4 in Pattern 4, Exps 3-4 in NGC 5338-UVIS (13)	[==>(Pattern 2, Copy 1)]	[6]	
	[==>(Pattern 2, Copy 2)]										



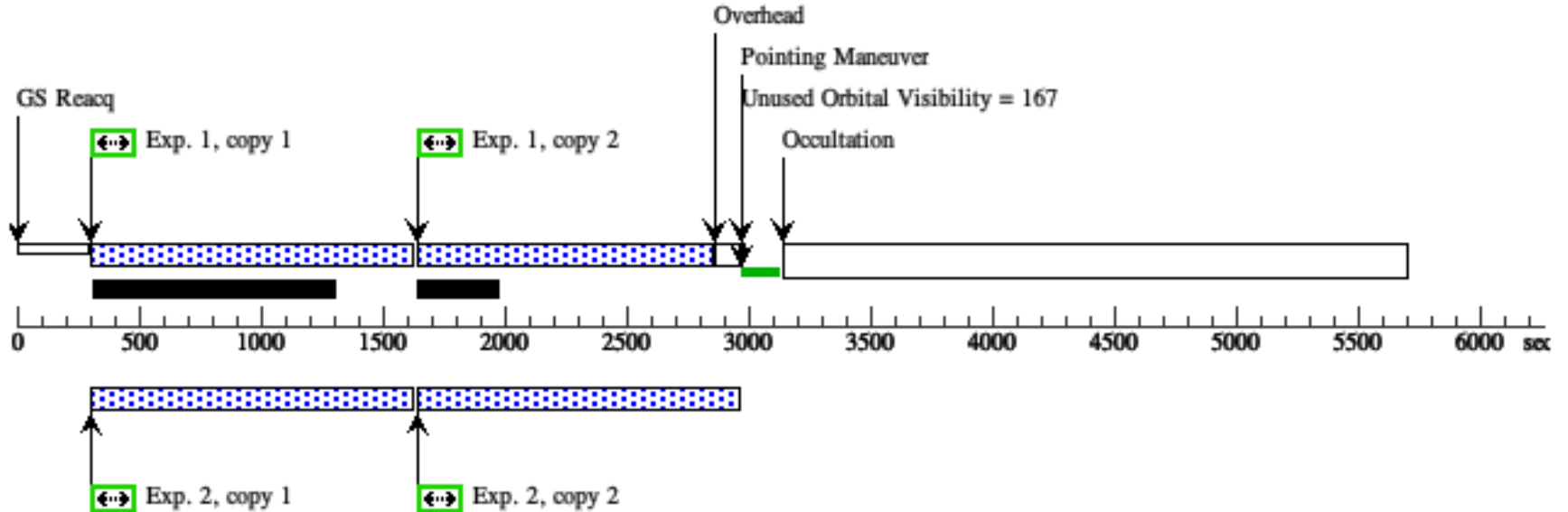
Orbit 3

Server Version: 20190514



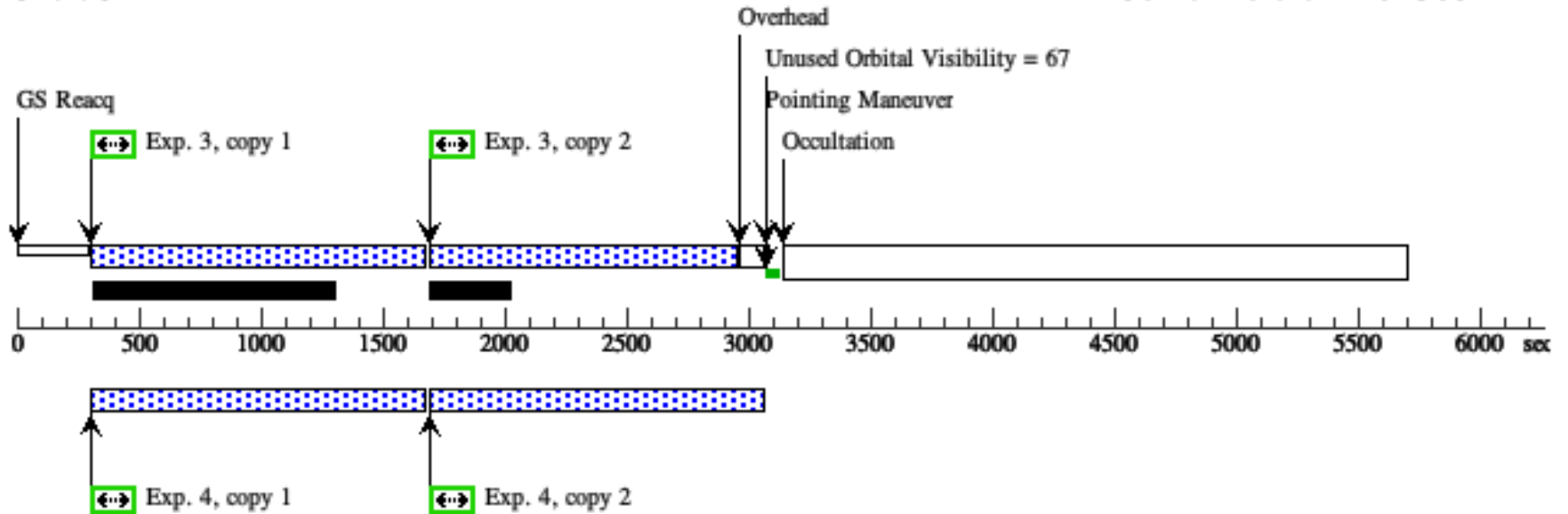
Orbit 4

Server Version: 20190514



Orbit 5

Server Version: 20190514



Orbit 6

Server Version: 20190514

