



14069 - Searching For Multiple Populations in Massive Young and Intermediate Age Clusters

Cycle: 23, 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) NGC1850	WFC3/UVIS	3	07-Sep-2016 16:55:19.0	yes
02	(2) NGC1866	WFC3/UVIS	3	07-Sep-2016 16:55:22.0	yes
03	(3) NGC1856	WFC3/UVIS	1	07-Sep-2016 16:55:23.0	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	(4) NGC419	WFC3/UVIS	2	07-Sep-2016 16:55:24.0	yes
05	(5) NGC1783	WFC3/UVIS	1	07-Sep-2016 16:55:25.0	yes
06	(6) NGC1806	WFC3/UVIS	1	07-Sep-2016 16:55:25.0	yes
07	(7) NGC1846	WFC3/UVIS	1	07-Sep-2016 16:55:26.0	yes
08	(8) NGC416	WFC3/UVIS	3	07-Sep-2016 16:55:27.0	yes
09	(9) NGC339	WFC3/UVIS	3	07-Sep-2016 16:55:29.0	yes
10	(10) LINDSAY1	WFC3/UVIS	3	07-Sep-2016 16:55:30.0	yes
11	(11) NGC1978	WFC3/UVIS	3	07-Sep-2016 16:55:32.0	yes
12	(12) NGC121	WFC3/UVIS	1	07-Sep-2016 16:55:34.0	yes

25 Total Orbits Used

ABSTRACT

We propose to obtain imaging of 12 massive clusters within the LMC/SMC, spanning a wide range of ages (100 Myr - 10 Gyr), in order to search for abundance spreads (i.e. multiple populations) within them. While all ancient globular clusters (GCs) studied to date, in the necessary detail, possess multiple populations, no massive ($>10^5$ Msun) young (< 1 Gyr) or intermediate (1-8 Gyr) age clusters have been found with abundance spreads. This raises the fundamental question: what controls whether a cluster will host multiple populations? The standard suggestion is that cluster mass is the crucial parameter, although recent results on the initial masses of GCs have called this into question. An alternative view is that GC formation was fundamentally different than the formation of other (< 10 Gyr) massive clusters. The proposed observations will definitively address whether age or mass is the crucial parameter controlling the appearance of multiple populations. The proposed sample occupies a critical region of parameter space (age/mass) where there are no Milky Way counterparts.

OBSERVING DESCRIPTION

We propose to obtain imaging of 12 massive star clusters within the LMC/SMC, spanning a wide range of ages (0.1 - 10 Gyr), in order to search for elemental abundance spreads and multiple populations. The clusters will be observed in the F343N, F336W and F438W WFC3/UVIS filters, which will provide accurate color-magnitude diagrams (CMD) for studies of these phenomena.

Proposal 14069 (STScI Edit Number: 2, Created: Wednesday, September 7, 2016 3:55:35 PM EST) - Overview

A CMD for such a large range of stellar ages covers everything from red and very bright giants down to the main sequence stars of various brightness and colors. To reach our science goals, it is crucial not to saturate the bright giants by using a short exposure and to reach a sufficient depth beyond the main-sequence turn-off using long exposures. Therefore, for each cluster, a short exposure and two or three long exposures in each filter are required. To cover the gap between the two WFC3/UVIS CCD chips, we use two dithered pointings. In order to maximize the overlap, we also require a specific orientation to match the orientation of those target clusters which have archival observations with the WFC3/UVIS. This orientation is specified in the Visit Orientation Requirement for these clusters/visits as follows: Visit3 - ngc1856, Min=324, Max=334; Visit4 - ngc419, Min=307, Max=317; Visit5-ngc1783, Min=298, Max=308; Visit6 - ngc1806, Min=297, Max=307; Visit7 - ngc1846, Min=122, Max=132; Visit12 - ngc121, Min=215 to Max=225.

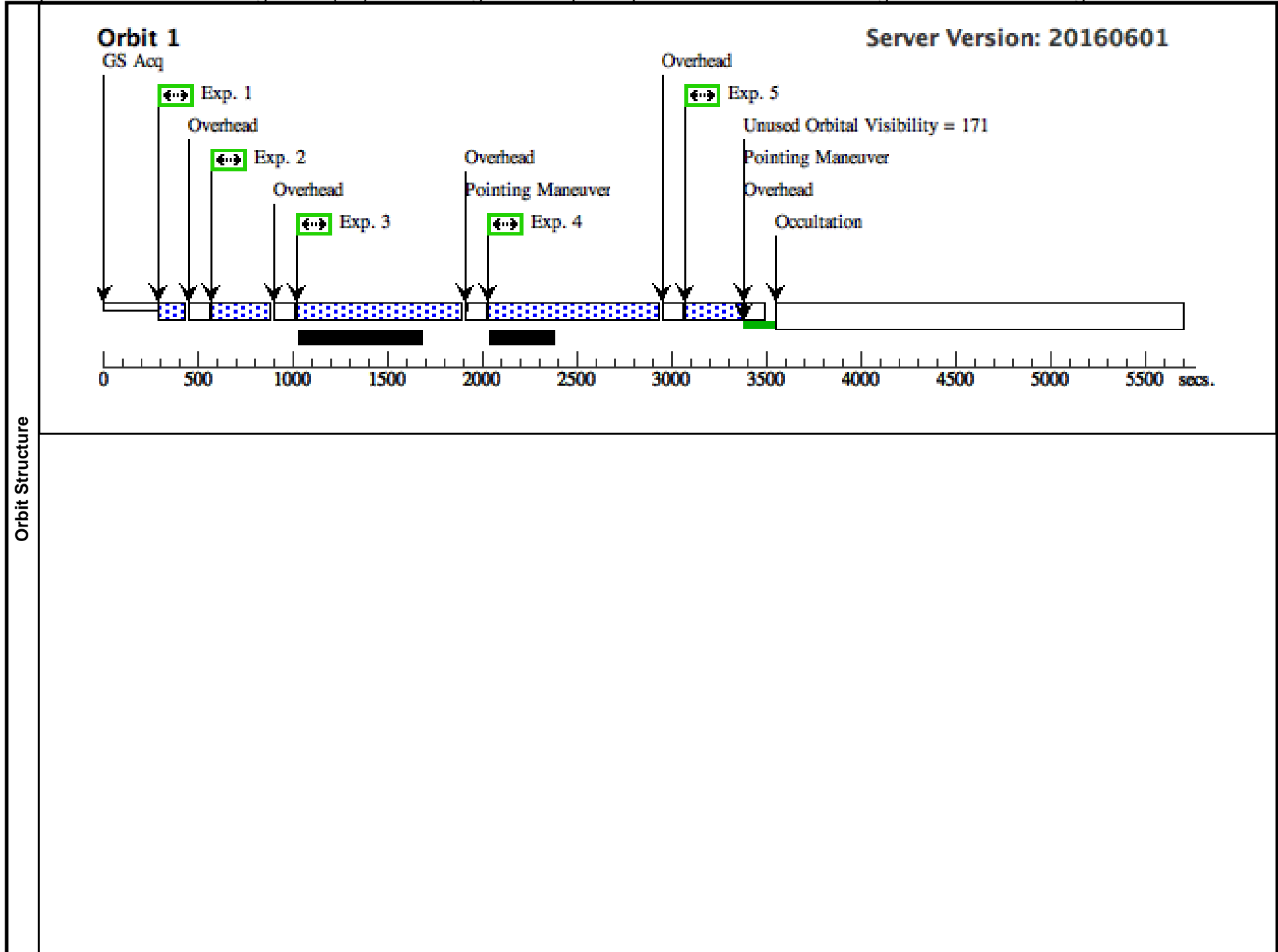
Proposal 14069 - Visit1 - ngc1850 (01) - Searching For Multiple Populations in Massive Young and Intermediate Age Clusters

Wed Sep 07 20:55:35 GMT 2016

Visit	Proposal 14069, Visit1 - ngc1850 (01), completed				
	Diagnostic Status: No Diagnostics				
	Scientific Instruments: WFC3/UVIS				
	Special Requirements: (none)				

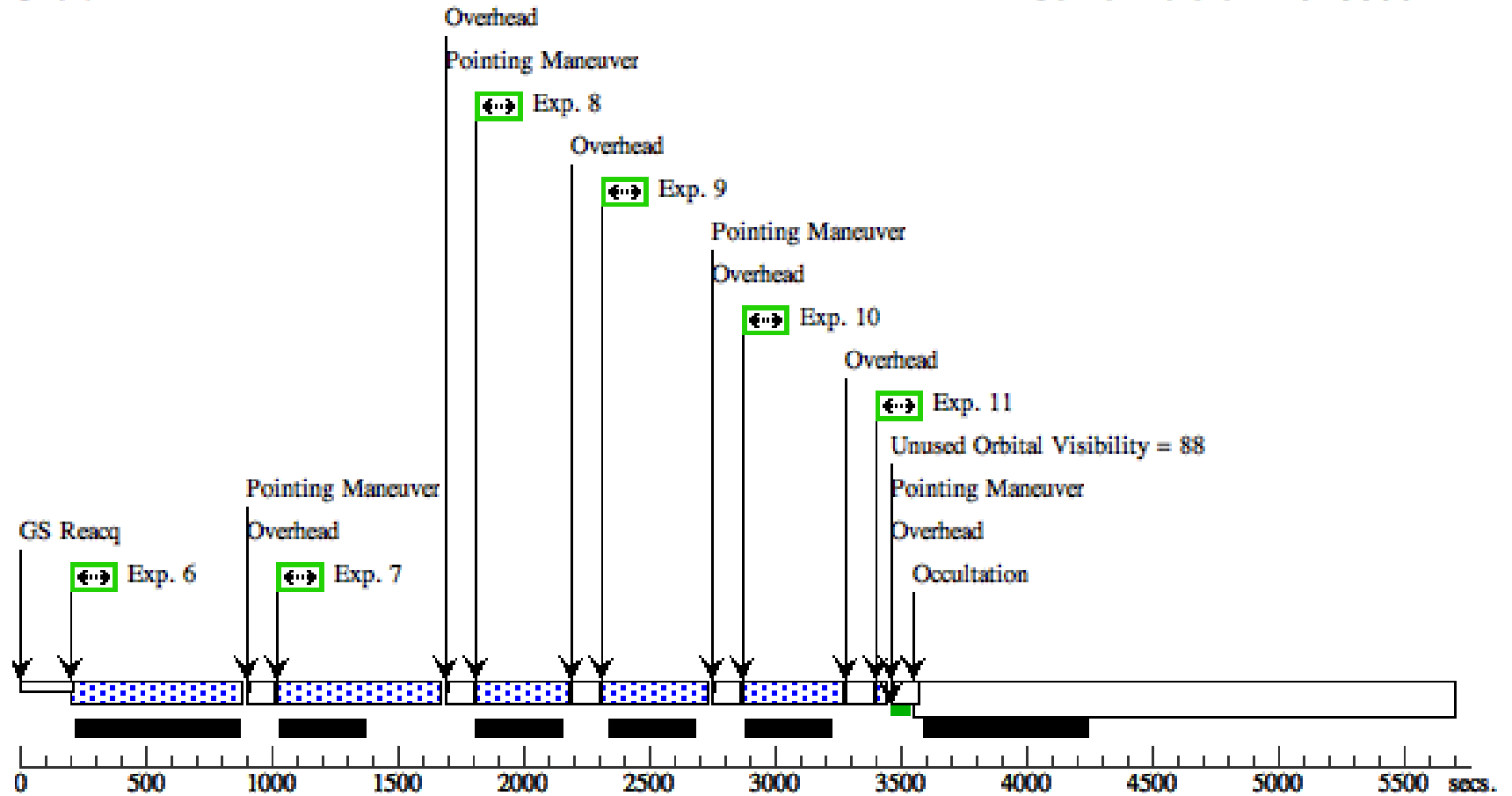
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	NGC1850	RA: 05 08 45.2224 (77.1884267d) Dec: -68 45 43.09 (-68.76197d) Equinox: J2000		V=8.96	Reference Frame: SIMBAD
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>						

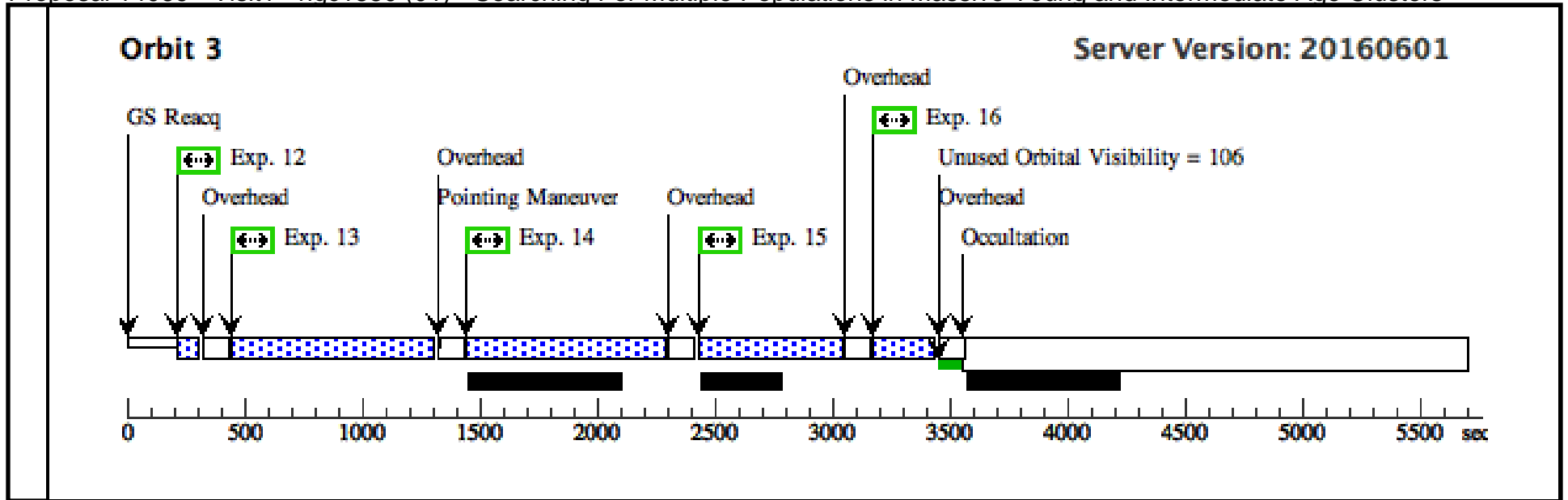
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F438W - 11 0	(1) NGC1850	WFC3/UVIS, ACCUM, UVIS1	F438W	FLASH=12	POS TARG 0,0		110 Secs (110 Secs) [==>]	[1]
	2	F343N - 300	(1) NGC1850	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0,0		300 Secs (300 Secs) [==>]	[1]
	3	F343N - 875	(1) NGC1850	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0,0		875 Secs (875 Secs) [==>]	[1]
	4	F343N - 900	(1) NGC1850	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0.18,2.4 4		900 Secs (900 Secs) [==>]	[1]
	5	F343N - 300	(1) NGC1850	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0.18,2.4 4		300 Secs (300 Secs) [==>]	[1]
	6	F336W - 675	(1) NGC1850	WFC3/UVIS, ACCUM, UVIS1	F336W	FLASH=12	POS TARG 0,0		675 Secs (675 Secs) [==>]	[2]
	7	F336W - 65 0	(1) NGC1850	WFC3/UVIS, ACCUM, UVIS1	F336W	FLASH=12	POS TARG 0.18,2.4 4		650 Secs (650 Secs) [==>]	[2]
	8	F336W - 37 0	(1) NGC1850	WFC3/UVIS, ACCUM, UVIS1	F336W	FLASH=12	POS TARG 0,0		370 Secs (370 Secs) [==>]	[2]
	9	F438W - 40 0	(1) NGC1850	WFC3/UVIS, ACCUM, UVIS1	F438W	FLASH=8	POS TARG 0,0		400 Secs (400 Secs) [==>]	[2]
	10	F438W - 40 0	(1) NGC1850	WFC3/UVIS, ACCUM, UVIS1	F438W	FLASH=8	POS TARG 0.18,2.4 4		400 Secs (400 Secs) [==>]	[2]
	11	F438W - 45	(1) NGC1850	WFC3/UVIS, ACCUM, UVIS1	F438W	FLASH=12	POS TARG 0.18,2.4 4		45 Secs (45 Secs) [==>]	[2]
	12	F438W - 90	(1) NGC1850	WFC3/UVIS, ACCUM, UVIS1	F438W	FLASH=12	POS TARG 0,0		90 Secs (90 Secs) [==>]	[3]
	13	F343N - 850	(1) NGC1850	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0,0		850 Secs (850 Secs) [==>]	[3]
	14	F343N - 850	(1) NGC1850	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0.18,2.4 4		850 Secs (850 Secs) [==>]	[3]
	15	F336 - 600	(1) NGC1850	WFC3/UVIS, ACCUM, UVIS1	F336W	FLASH=12	POS TARG 0.18,2.4 4		600 Secs (600 Secs) [==>]	[3]
	16	F336 - 260	(1) NGC1850	WFC3/UVIS, ACCUM, UVIS1	F336W	FLASH=12	POS TARG 0.18,2.4 4		260 Secs (260 Secs) [==>]	[3]



Orbit 2

Server Version: 20160601





Proposal 14069 - Visit2 - ngc1866 (02) - Searching For Multiple Populations in Massive Young and Intermediate Age Clusters

Wed Sep 07 20:55:35 GMT 2016

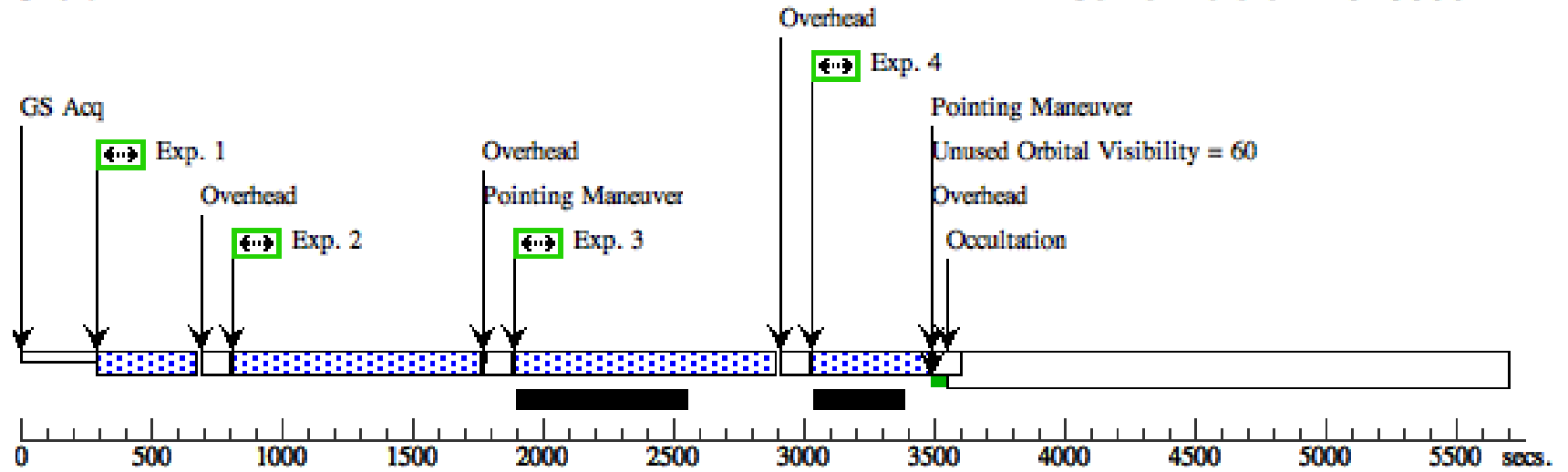
Visit	Proposal 14069, Visit2 - ngc1866 (02), completed				
	Diagnostic Status: No Diagnostics				
	Scientific Instruments: WFC3/UVIS				
	Special Requirements: ORIENT 174D TO 176 D				

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(2)	NGC1866	RA: 05 13 38.4300 (78.4101250d) Dec: -65 27 52.82 (-65.46467d) Equinox: J2000		V=9.73	Reference Frame: SIMBAD
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>						

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F343N - 450	(2) NGC1866	WFC3/UVIS, ACCUM, UVIS-CENTER	F343N	FLASH=12	POS TARG 0.18,2,4 4		350 Secs (350 Secs) [==>]	[1]
	2	F343N - 900	(2) NGC1866	WFC3/UVIS, ACCUM, UVIS-CENTER	F343N	FLASH=12	POS TARG 0.18,2,4 4		950 Secs (950 Secs) [==>]	[1]
	3	F343N - 100	(2) NGC1866 0	WFC3/UVIS, ACCUM, UVIS-CENTER	F343N	FLASH=12	POS TARG 0,0		1000 Secs (1000 Secs) [==>]	[1]
	4	F343N - 450	(2) NGC1866	WFC3/UVIS, ACCUM, UVIS-CENTER	F343N	FLASH=12	POS TARG 0,0		450 Secs (450 Secs) [==>]	[1]
	5	F438W - 45	(2) NGC1866 0	WFC3/UVIS, ACCUM, UVIS-CENTER	F438W	FLASH=8	POS TARG 0.18,2,4 4		450 Secs (450 Secs) [==>]	[2]
	6	F438W - 55	(2) NGC1866 0	WFC3/UVIS, ACCUM, UVIS-CENTER	F555W		POS TARG 0,0		550 Secs (550 Secs) [==>]	[2]
	7	F438W - 95	(2) NGC1866	WFC3/UVIS, ACCUM, UVIS-CENTER	F438W	FLASH=12	POS TARG 0,0		95 Secs (95 Secs) [==>]	[2]
	8	F555W - 70	(2) NGC1866 0	WFC3/UVIS, ACCUM, UVIS-CENTER	F555W		POS TARG 0,0		700 Secs (700 Secs) [==>]	[2]
	9	F555W - 45	(2) NGC1866 0	WFC3/UVIS, ACCUM, UVIS-CENTER	F555W		POS TARG 0.18,2,4 4		450 Secs (450 Secs) [==>]	[2]
	10	F555W - 75	(2) NGC1866	WFC3/UVIS, ACCUM, UVIS-CENTER	F555W	FLASH=12	POS TARG 0,0		75 Secs (75 Secs) [==>]	[2]
	11	F438W - 15	(2) NGC1866 0	WFC3/UVIS, ACCUM, UVIS-CENTER	F438W	FLASH=12	POS TARG 0.18,2,4 4		150 Secs (150 Secs) [==>]	[3]
	12	F555W - 95	(2) NGC1866	WFC3/UVIS, ACCUM, UVIS-CENTER	F555W	FLASH=12	POS TARG 0.18,2,4 4		95 Secs (95 Secs) [==>]	[3]
	13	F343N - 115	(2) NGC1866 0	WFC3/UVIS, ACCUM, UVIS-CENTER	F343N	FLASH=12	POS TARG 0,0		1150 Secs (1150 Secs) [==>]	[3]
	14	F438W - 50	(2) NGC1866 0	WFC3/UVIS, ACCUM, UVIS-CENTER	F438W	FLASH=8	POS TARG 0.18,2,4 4		500 Secs (500 Secs) [==>]	[3]
	15	F555W - 50	(2) NGC1866 0	WFC3/UVIS, ACCUM, UVIS-CENTER	F555W		POS TARG 0.18,2,4 4		500 Secs (500 Secs) [==>]	[3]
	16	F555W - 15	(2) NGC1866 0	WFC3/UVIS, ACCUM, UVIS-CENTER	F555W	FLASH=8	POS TARG 0,null		150 Secs (150 Secs) [==>]	[3]

Orbit 1

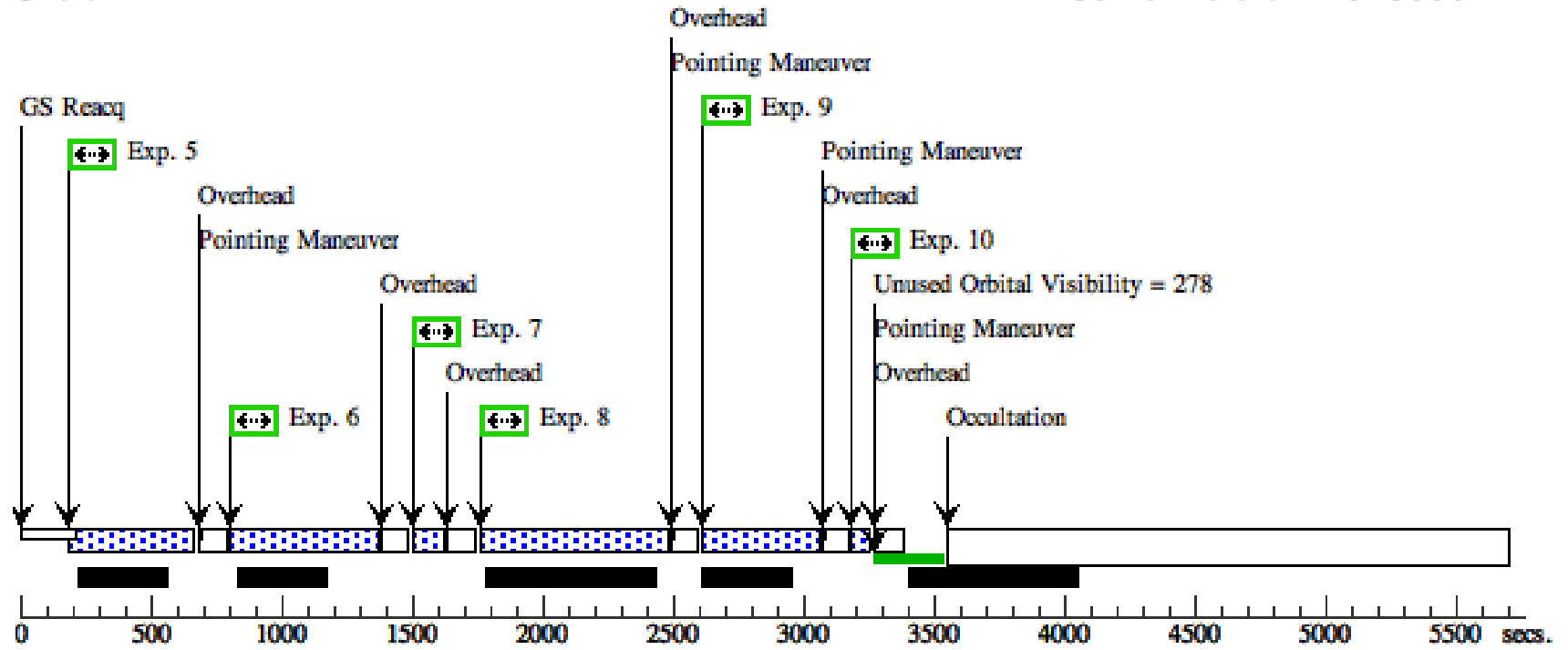
Server Version: 20160601

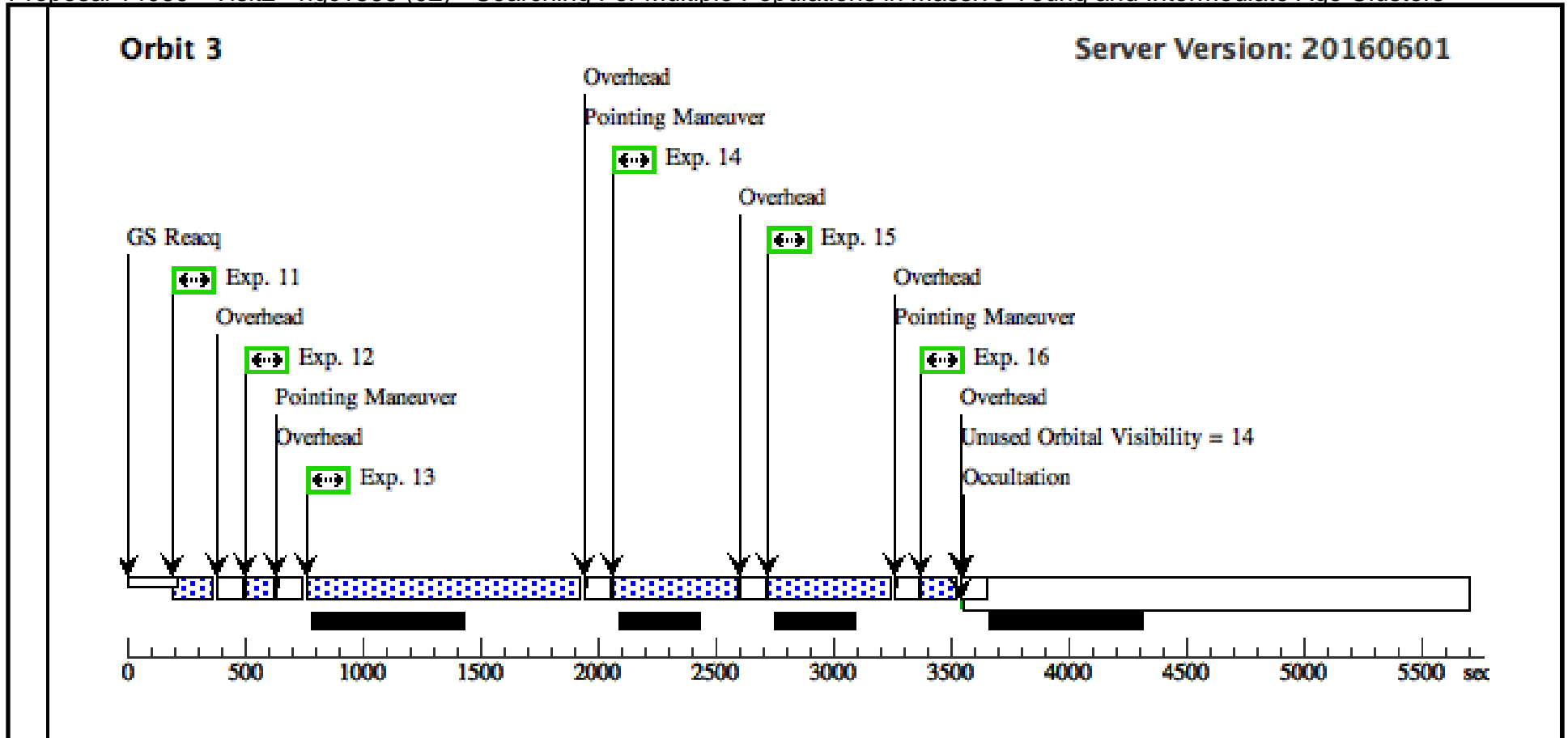


Orbit Structure

Orbit 2

Server Version: 20160601





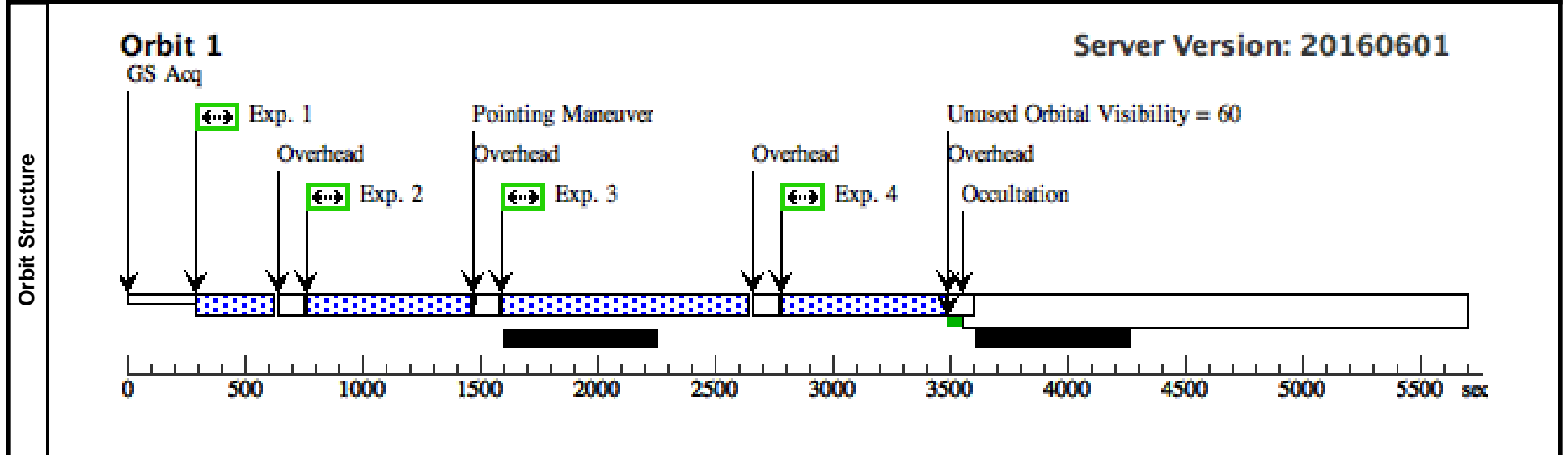
Proposal 14069 - Visit3 - ngc1856 (03) - Searching For Multiple Populations in Massive Young and Intermediate Age Clusters

Wed Sep 07 20:55:35 GMT 2016

Visit	Proposal 14069, Visit3 - ngc1856 (03), scheduling				
	Diagnostic Status: No Diagnostics				
	Scientific Instruments: WFC3/UVIS				
	Special Requirements: ORIENT 324D TO 334 D				

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(3)	NGC1856	RA: 05 09 29.9160 (77.3746500d) Dec: -69 07 43.05 (-69.12862d) Equinox: J2000		V=10.06	Reference Frame: SIMBAD
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>						

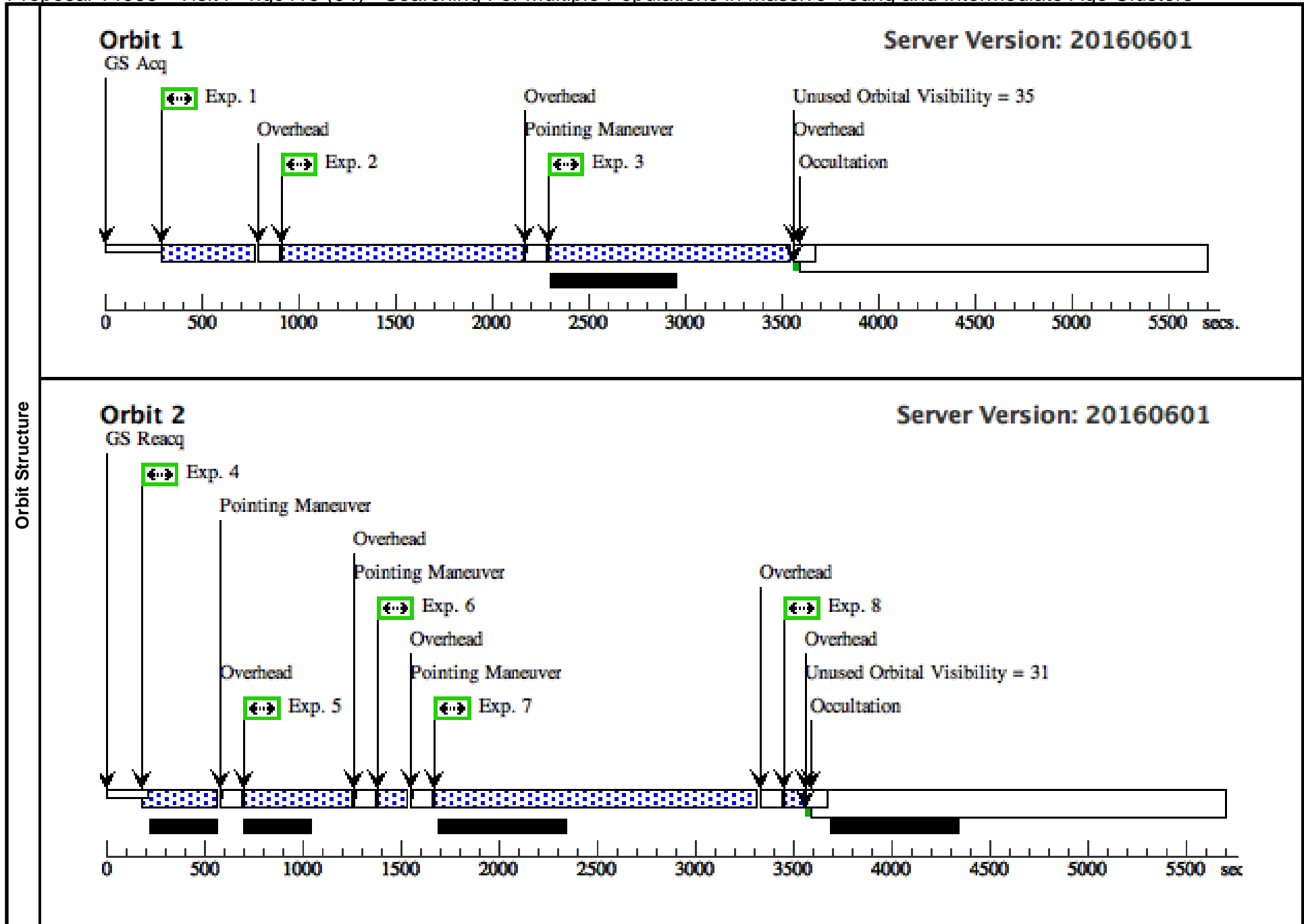
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F343N - 300	(3) NGC1856	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0,0; GS ACQ SCENARI O BASE1B3		300 Secs (300 Secs) [==>]	[1]
	2	F343N - 700	(3) NGC1856	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0,0,0		700 Secs (700 Secs) [==>]	[1]
	3	F343N - 1050	(3) NGC1856	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0.18,2,4 4		1050 Secs (1050 Secs) [==>]	[1]
	4	F343N - 700	(3) NGC1856	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0.18,2,4 4		700 Secs (700 Secs) [==>]	[1]



Proposal 14069 - Visit4 - ngc419 (04) - Searching For Multiple Populations in Massive Young and Intermediate Age Clusters

Wed Sep 07 20:55:35 GMT 2016

Visit	Proposal 14069, Visit4 - ngc419 (04), scheduled Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: ORIENT 307D TO 317 D									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(4)	NGC419	RA: 01 08 22.5500 (17.0939583d) Dec: -72 53 15.58 (-72.88766d) Equinox: J2000		V=10.5	Reference Frame: SIMBAD				
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F343N - 450	(4) NGC419	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0,0		450 Secs (450 Secs)	[1]
	2	F343N - 125 0	(4) NGC419	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0,0		1250 Secs (1250 Secs)	[1]
	3	F343N - 125 0	(4) NGC419	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0.18,2.4 4		1250 Secs (1250 Secs)	[1]
	4	F438W - 35 0	(4) NGC419	WFC3/UVIS, ACCUM, UVIS1	F438W	FLASH=12	POS TARG 0.18,2.4 4		350 Secs (350 Secs)	[2]
	5	F438W - 55 0	(4) NGC419	WFC3/UVIS, ACCUM, UVIS1	F438W	FLASH=8	POS TARG 0,0		550 Secs (550 Secs)	[2]
	6	F438W - 15 0	(4) NGC419	WFC3/UVIS, ACCUM, UVIS1	F438W	FLASH=12	POS TARG 0.18,2.4 4		150 Secs (150 Secs)	[2]
	7	F343N - 162 5	(4) NGC419	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=8	POS TARG 0,0		1625 Secs (1625 Secs)	[2]
	8	F438W - 70	(4) NGC419	WFC3/UVIS, ACCUM, UVIS1	F438W	FLASH=12	POS TARG 0,0		70 Secs (70 Secs)	[2]



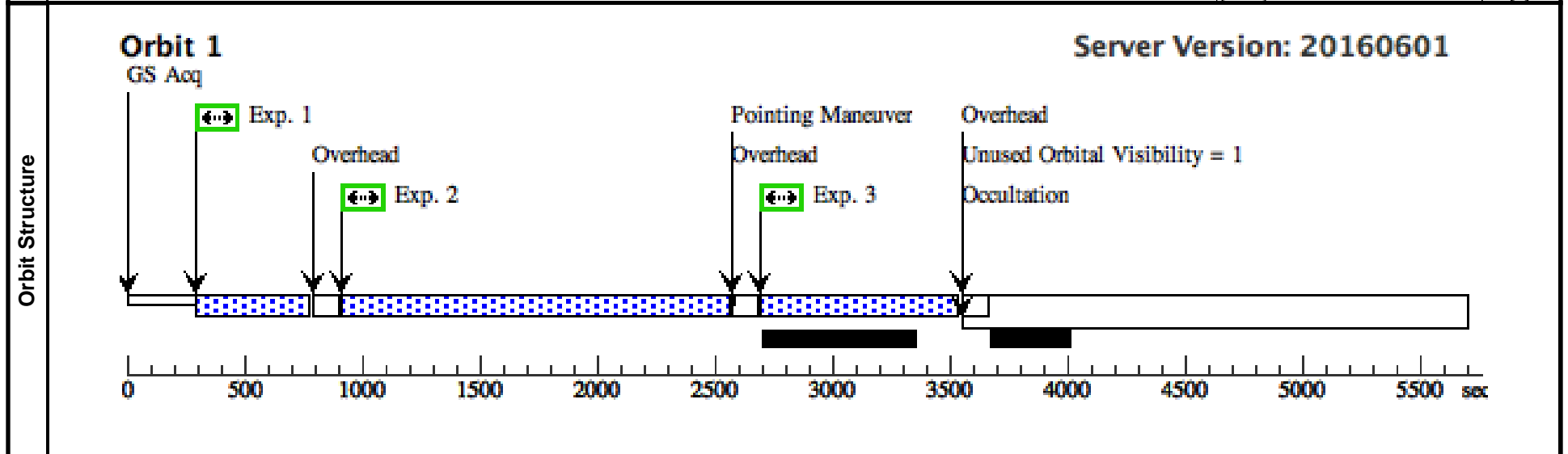
Proposal 14069 - Visit5- ngc1783 (05) - Searching For Multiple Populations in Massive Young and Intermediate Age Clusters

Wed Sep 07 20:55:35 GMT 2016

Visit	Proposal 14069, Visit5- ngc1783 (05), scheduling				
	Diagnostic Status: No Diagnostics				
	Scientific Instruments: WFC3/UVIS				
	Special Requirements: ORIENT 298D TO 308 D				

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(5)	NGC1783	RA: 04 59 10.2820 (74.7928417d) Dec: -65 59 17.60 (-65.98822d) Equinox: J2000		V=10.93	Reference Frame: SIMBAD
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>					

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F343N - 450	(5) NGC1783	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0,0; GS ACQ SCENARI O BASE1B3		450 Secs (450 Secs) [==>]	[1]
	2	F343N - 165 0	(5) NGC1783	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=8	POS TARG 0,0		1650 Secs (1650 Secs) [==>]	[1]
	3	F343N - 845	(5) NGC1783	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0.18,2.4 4		845 Secs (845 Secs) [==>]	[1]



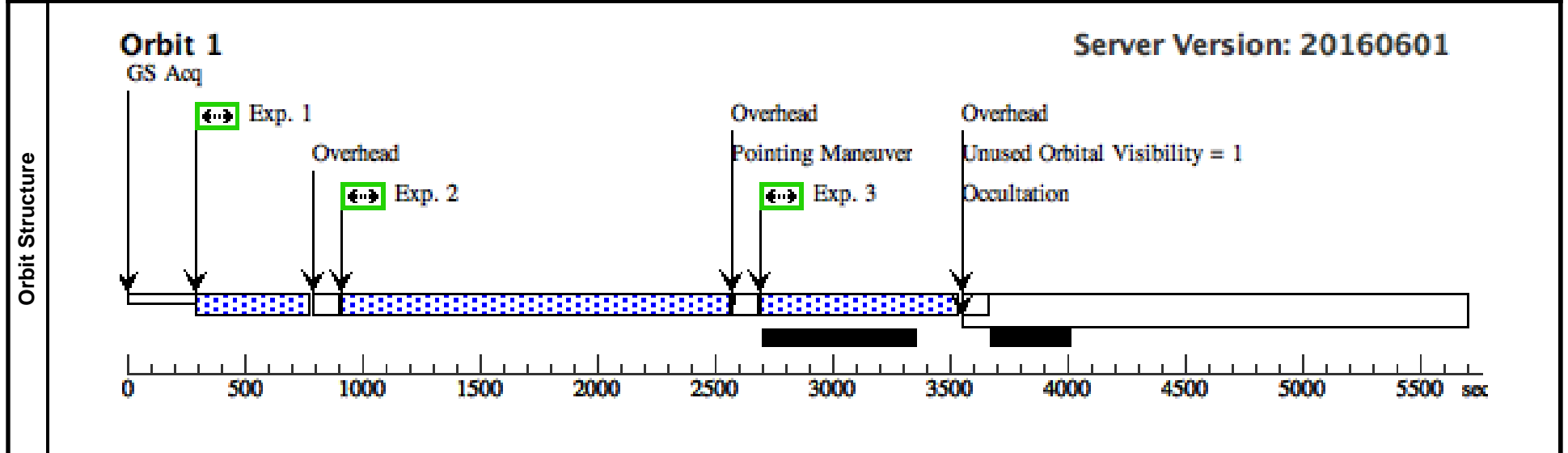
Proposal 14069 - Visit6 - ngc1806 (06) - Searching For Multiple Populations in Massive Young and Intermediate Age Clusters

Wed Sep 07 20:55:35 GMT 2016

Visit	Proposal 14069, Visit6 - ngc1806 (06), scheduling				
	Diagnostic Status: No Diagnostics				
	Scientific Instruments: WFC3/UVIS				
	Special Requirements: ORIENT 297D TO 307 D				

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(6)	NGC1806	RA: 05 02 11.4700 (75.5477917d) Dec: -67 59 27.18 (-67.99088d) Equinox: J2000		V=11.3	Reference Frame: SIMBAD
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>					

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F343N - 450	(6) NGC1806	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0,0		450 Secs (450 Secs)	[1]
	2	F343N - 165	(6) NGC1806	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=8	POS TARG 0,0		1650 Secs (1650 Secs)	[1]
	3	F343N - 845	(6) NGC1806	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0.18,2.4		845 Secs (845 Secs)	[1]



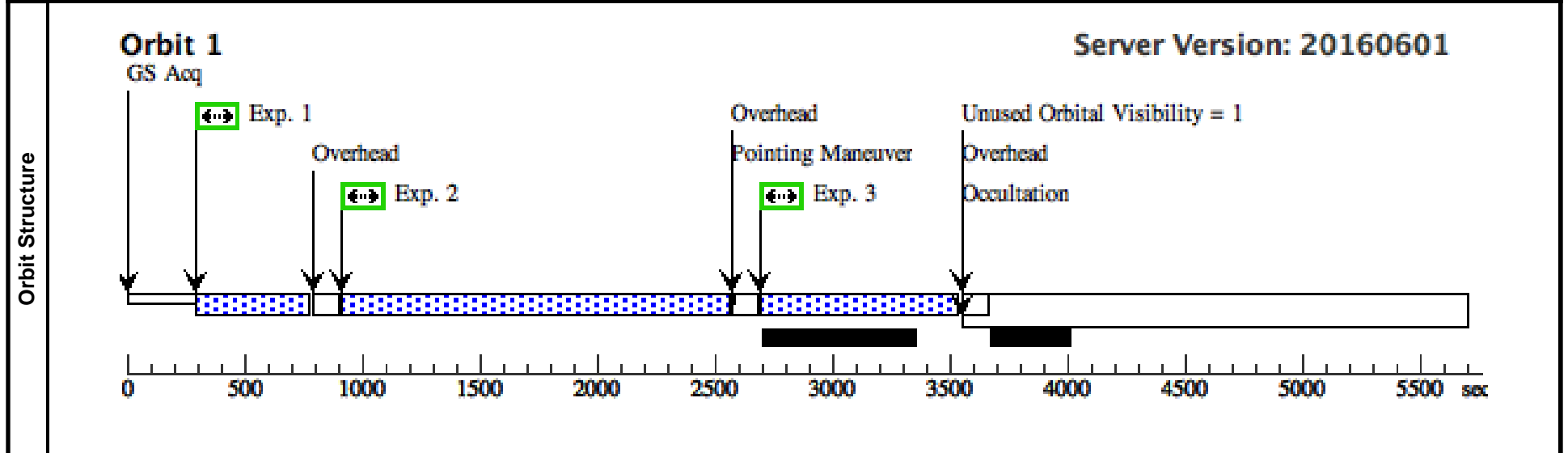
Proposal 14069 - Visit7 - ngc1846 (07) - Searching For Multiple Populations in Massive Young and Intermediate Age Clusters

Wed Sep 07 20:55:35 GMT 2016

Visit	Proposal 14069, Visit7 - ngc1846 (07), completed				
	Diagnostic Status: No Diagnostics				
	Scientific Instruments: WFC3/UVIS				
	Special Requirements: ORIENT 122D TO 132 D				

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(7)	NGC1846	RA: 05 07 38.4650 (76.9102708d) Dec: -67 27 42.37 (-67.46177d) Equinox: J2000		V=11.31	Reference Frame: SIMBAD
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>					

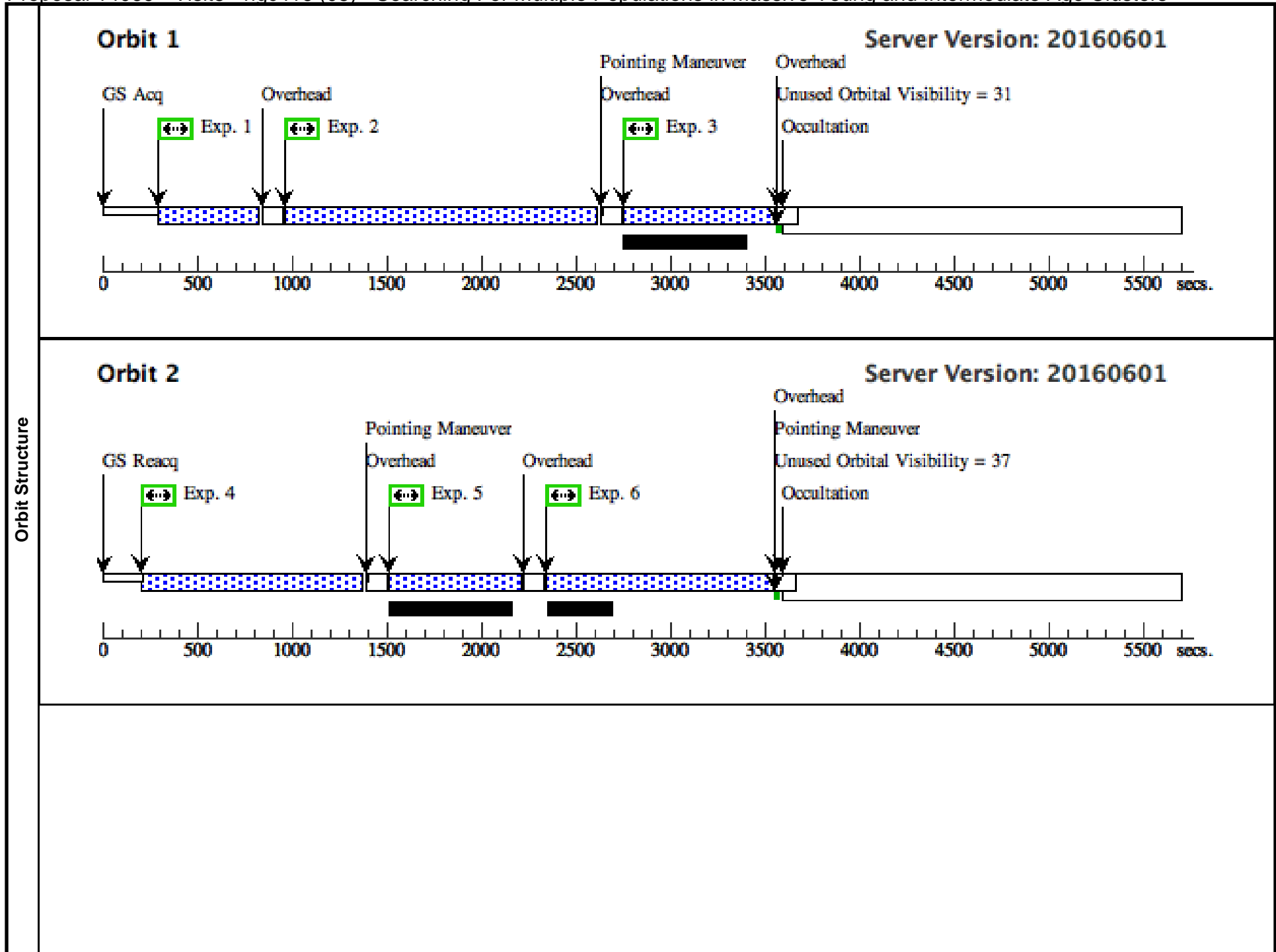
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F343N - 450	(7) NGC1846	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0,0		450 Secs (450 Secs)	[1]
	2	F343N - 165	(7) NGC1846	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=8	POS TARG 0,0		1650 Secs (1650 Secs)	[1]
	3	F343N - 845	(7) NGC1846	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0.18,2.4		845 Secs (845 Secs)	[1]

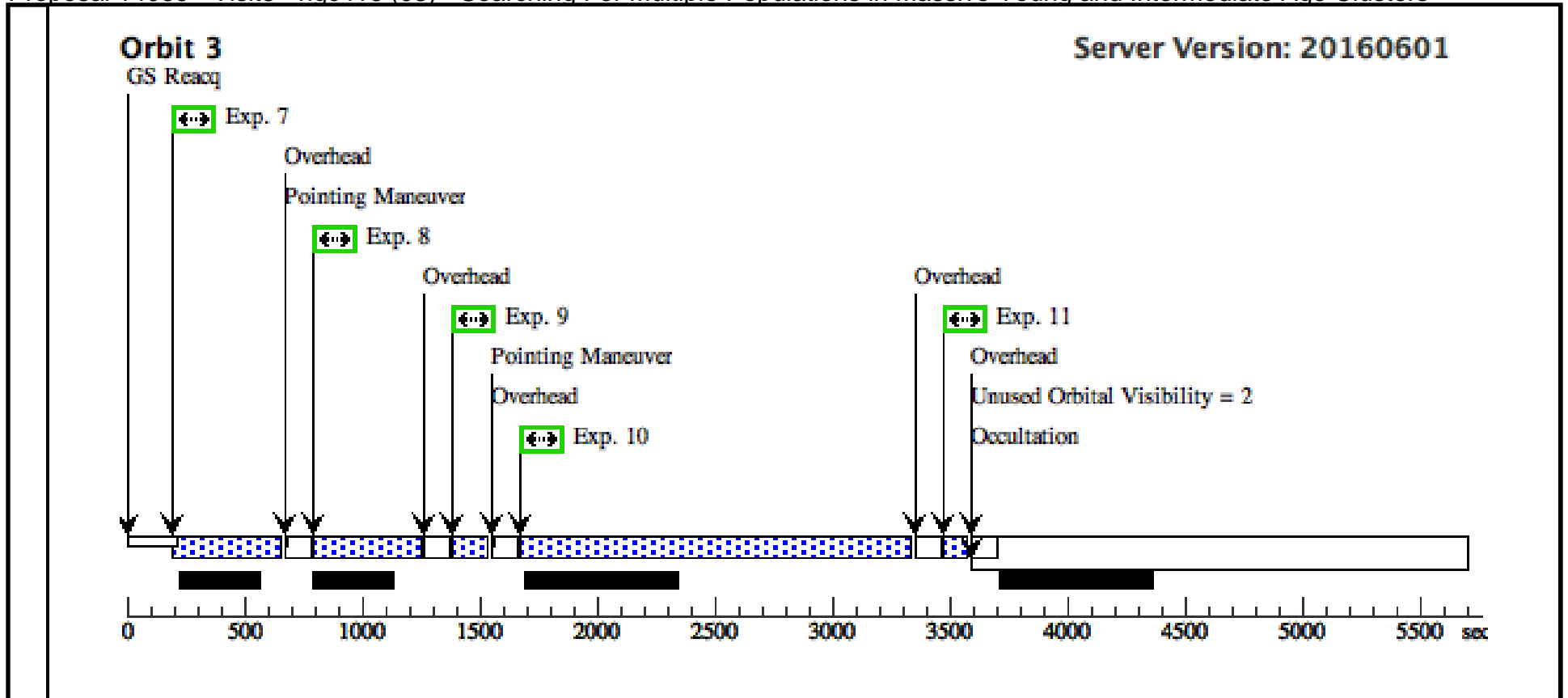


Proposal 14069 - Visit8 - ngc416 (08) - Searching For Multiple Populations in Massive Young and Intermediate Age Clusters

Wed Sep 07 20:55:35 GMT 2016

Fixed Targets	Visit					Exposures																																																																																																																																		
	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit																																																																																																																								
Proposal 14069, Visit8 - ngc416 (08), completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: (none)																																																																																																																																								
(8) NGC416 RA: 01 07 58.9720 (16.9957167d) Dec: -72 21 22.55 (-72.35626d) Equinox: J2000 Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.																																																																																																																																								
<table border="1"> <thead> <tr> <th>#</th> <th>Label</th> <th>Target</th> <th>Config,Mode,Aperture</th> <th>Spectral Els.</th> <th>Opt. Params.</th> <th>Special Reqs.</th> <th>Groups</th> <th>Exp. Time (Total)/[Actual Dur.]</th> <th>Orbit</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>F343N - 500</td> <td>(8) NGC416</td> <td>WFC3/UVIS, ACCUM, UVIS1</td> <td>F343N</td> <td>FLASH=12</td> <td>POS TARG 0,0</td> <td></td> <td>500 Secs (500 Secs) [==>]</td> <td>[1]</td> </tr> <tr> <td>2</td> <td>F343N - 165 5</td> <td>(8) NGC416</td> <td>WFC3/UVIS, ACCUM, UVIS1</td> <td>F343N</td> <td>FLASH=8</td> <td>POS TARG 0,0</td> <td></td> <td>1655 Secs (1655 Secs) [==>]</td> <td>[1]</td> </tr> <tr> <td>3</td> <td>F343N - 800</td> <td>(8) NGC416</td> <td>WFC3/UVIS, ACCUM, UVIS1</td> <td>F343N</td> <td>FLASH=12</td> <td>POS TARG 0.18,2.4 4</td> <td></td> <td>800 Secs (800 Secs) [==>]</td> <td>[1]</td> </tr> <tr> <td>4</td> <td>F336W - 11 60</td> <td>(8) NGC416</td> <td>WFC3/UVIS, ACCUM, UVIS1</td> <td>F336W</td> <td>FLASH=8</td> <td>POS TARG 0.18,2.4 4</td> <td></td> <td>1160 Secs (1160 Secs) [==>]</td> <td>[2]</td> </tr> <tr> <td>5</td> <td>F336W - 70 0</td> <td>(8) NGC416</td> <td>WFC3/UVIS, ACCUM, UVIS1</td> <td>F336W</td> <td>FLASH=12</td> <td>POS TARG 0,0</td> <td></td> <td>700 Secs (700 Secs) [==>]</td> <td>[2]</td> </tr> <tr> <td>6</td> <td>F336W - 12 00</td> <td>(8) NGC416</td> <td>WFC3/UVIS, ACCUM, UVIS1</td> <td>F336W</td> <td>FLASH=8</td> <td>POS TARG 0,0</td> <td></td> <td>1200 Secs (1200 Secs) [==>]</td> <td>[2]</td> </tr> <tr> <td>7</td> <td>F438W - 44 0</td> <td>(8) NGC416</td> <td>WFC3/UVIS, ACCUM, UVIS1</td> <td>F438W</td> <td>FLASH=8</td> <td>POS TARG 0.18,2.4 4</td> <td></td> <td>440 Secs (440 Secs) [==>]</td> <td>[3]</td> </tr> <tr> <td>8</td> <td>F438W - 46 0</td> <td>(8) NGC416</td> <td>WFC3/UVIS, ACCUM, UVIS1</td> <td>F438W</td> <td>FLASH=8</td> <td>POS TARG 0,0</td> <td></td> <td>460 Secs (460 Secs) [==>]</td> <td>[3]</td> </tr> <tr> <td>9</td> <td>F438W - 15 0</td> <td>(8) NGC416</td> <td>WFC3/UVIS, ACCUM, UVIS1</td> <td>F438W</td> <td>FLASH=12</td> <td>POS TARG 0,0</td> <td></td> <td>150 Secs (150 Secs) [==>]</td> <td>[3]</td> </tr> <tr> <td>10</td> <td>F343N - 165 0</td> <td>(8) NGC416</td> <td>WFC3/UVIS, ACCUM, UVIS1</td> <td>F343N</td> <td>FLASH=8</td> <td>POS TARG 0.18,2.4 4</td> <td></td> <td>1650 Secs (1650 Secs) [==>]</td> <td>[3]</td> </tr> <tr> <td>11</td> <td>F438W - 75</td> <td>(8) NGC416</td> <td>WFC3/UVIS, ACCUM, UVIS1</td> <td>F438W</td> <td>FLASH=12</td> <td>POS TARG 0.18,2.4 4</td> <td></td> <td>75 Secs (75 Secs) [==>]</td> <td>[3]</td> </tr> </tbody> </table>																	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	1	F343N - 500	(8) NGC416	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0,0		500 Secs (500 Secs) [==>]	[1]	2	F343N - 165 5	(8) NGC416	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=8	POS TARG 0,0		1655 Secs (1655 Secs) [==>]	[1]	3	F343N - 800	(8) NGC416	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0.18,2.4 4		800 Secs (800 Secs) [==>]	[1]	4	F336W - 11 60	(8) NGC416	WFC3/UVIS, ACCUM, UVIS1	F336W	FLASH=8	POS TARG 0.18,2.4 4		1160 Secs (1160 Secs) [==>]	[2]	5	F336W - 70 0	(8) NGC416	WFC3/UVIS, ACCUM, UVIS1	F336W	FLASH=12	POS TARG 0,0		700 Secs (700 Secs) [==>]	[2]	6	F336W - 12 00	(8) NGC416	WFC3/UVIS, ACCUM, UVIS1	F336W	FLASH=8	POS TARG 0,0		1200 Secs (1200 Secs) [==>]	[2]	7	F438W - 44 0	(8) NGC416	WFC3/UVIS, ACCUM, UVIS1	F438W	FLASH=8	POS TARG 0.18,2.4 4		440 Secs (440 Secs) [==>]	[3]	8	F438W - 46 0	(8) NGC416	WFC3/UVIS, ACCUM, UVIS1	F438W	FLASH=8	POS TARG 0,0		460 Secs (460 Secs) [==>]	[3]	9	F438W - 15 0	(8) NGC416	WFC3/UVIS, ACCUM, UVIS1	F438W	FLASH=12	POS TARG 0,0		150 Secs (150 Secs) [==>]	[3]	10	F343N - 165 0	(8) NGC416	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=8	POS TARG 0.18,2.4 4		1650 Secs (1650 Secs) [==>]	[3]	11	F438W - 75	(8) NGC416	WFC3/UVIS, ACCUM, UVIS1	F438W	FLASH=12	POS TARG 0.18,2.4 4		75 Secs (75 Secs) [==>]	[3]
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit																																																																																																																															
1	F343N - 500	(8) NGC416	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0,0		500 Secs (500 Secs) [==>]	[1]																																																																																																																															
2	F343N - 165 5	(8) NGC416	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=8	POS TARG 0,0		1655 Secs (1655 Secs) [==>]	[1]																																																																																																																															
3	F343N - 800	(8) NGC416	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0.18,2.4 4		800 Secs (800 Secs) [==>]	[1]																																																																																																																															
4	F336W - 11 60	(8) NGC416	WFC3/UVIS, ACCUM, UVIS1	F336W	FLASH=8	POS TARG 0.18,2.4 4		1160 Secs (1160 Secs) [==>]	[2]																																																																																																																															
5	F336W - 70 0	(8) NGC416	WFC3/UVIS, ACCUM, UVIS1	F336W	FLASH=12	POS TARG 0,0		700 Secs (700 Secs) [==>]	[2]																																																																																																																															
6	F336W - 12 00	(8) NGC416	WFC3/UVIS, ACCUM, UVIS1	F336W	FLASH=8	POS TARG 0,0		1200 Secs (1200 Secs) [==>]	[2]																																																																																																																															
7	F438W - 44 0	(8) NGC416	WFC3/UVIS, ACCUM, UVIS1	F438W	FLASH=8	POS TARG 0.18,2.4 4		440 Secs (440 Secs) [==>]	[3]																																																																																																																															
8	F438W - 46 0	(8) NGC416	WFC3/UVIS, ACCUM, UVIS1	F438W	FLASH=8	POS TARG 0,0		460 Secs (460 Secs) [==>]	[3]																																																																																																																															
9	F438W - 15 0	(8) NGC416	WFC3/UVIS, ACCUM, UVIS1	F438W	FLASH=12	POS TARG 0,0		150 Secs (150 Secs) [==>]	[3]																																																																																																																															
10	F343N - 165 0	(8) NGC416	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=8	POS TARG 0.18,2.4 4		1650 Secs (1650 Secs) [==>]	[3]																																																																																																																															
11	F438W - 75	(8) NGC416	WFC3/UVIS, ACCUM, UVIS1	F438W	FLASH=12	POS TARG 0.18,2.4 4		75 Secs (75 Secs) [==>]	[3]																																																																																																																															

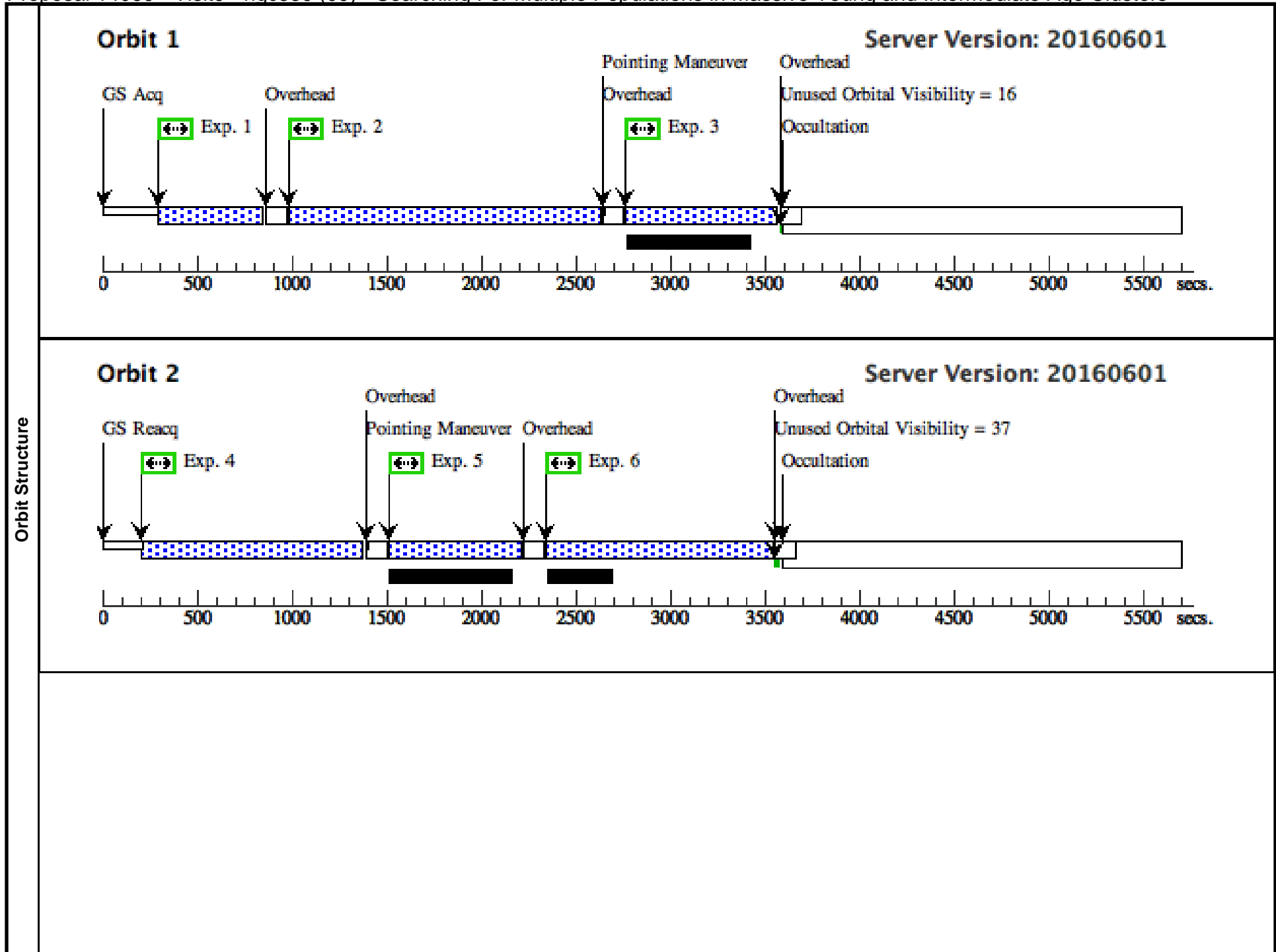


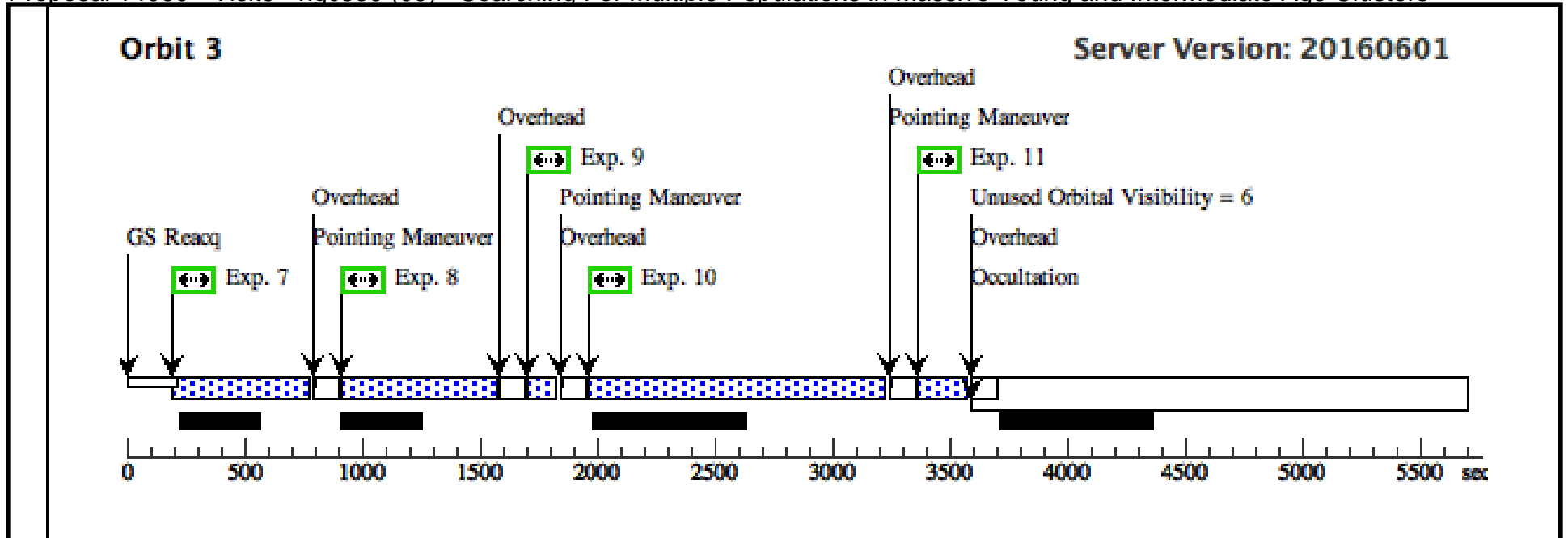


Proposal 14069 - Visit9 - ngc339 (09) - Searching For Multiple Populations in Massive Young and Intermediate Age Clusters

Wed Sep 07 20:55:35 GMT 2016

Visit	Proposal 14069, Visit9 - ngc339 (09), scheduling Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: (none)									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(9)	NGC339	RA: 00 57 43.0900 (14.4295417d) Dec: -74 28 48.78 (-74.48022d) Equinox: J2000		V=12.21	Reference Frame: SIMBAD				
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F343N - 520	(9) NGC339	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0,0		520 Secs (520 Secs) [==>]	[1]
	2	F343N - 165 0	(9) NGC339	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=8	POS TARG 0,0		1650 Secs (1650 Secs) [==>]	[1]
	3	F343N - 800	(9) NGC339	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0.18,2.4 4		800 Secs (800 Secs) [==>]	[1]
	4	F336W - 11 60	(9) NGC339	WFC3/UVIS, ACCUM, UVIS1	F336W	FLASH=8	POS TARG 0.18,2.4 4		1160 Secs (1160 Secs) [==>]	[2]
	5	F336W - 70 0	(9) NGC339	WFC3/UVIS, ACCUM, UVIS1	F336W	FLASH=12	POS TARG 0,0		700 Secs (700 Secs) [==>]	[2]
	6	F336W - 12 00	(9) NGC339	WFC3/UVIS, ACCUM, UVIS1	F336W	FLASH=8	POS TARG 0,0		1200 Secs (1200 Secs) [==>]	[2]
	7	F438W - 56 0	(9) NGC339	WFC3/UVIS, ACCUM, UVIS1	F438W	FLASH=8	POS TARG 0,0		560 Secs (560 Secs) [==>]	[3]
	8	F438W - 66 0	(9) NGC339	WFC3/UVIS, ACCUM, UVIS1	F438W	FLASH=8	POS TARG 0.18,2.4 4		660 Secs (660 Secs) [==>]	[3]
	9	F438W - 12 0	(9) NGC339	WFC3/UVIS, ACCUM, UVIS1	F438W	FLASH=12	POS TARG 0.18,2.4 4		120 Secs (120 Secs) [==>]	[3]
	10	F343N - 125 0	(9) NGC339	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0,0		1250 Secs (1250 Secs) [==>]	[3]
	11	F438W - 18 0	(9) NGC339	WFC3/UVIS, ACCUM, UVIS1	F438W	FLASH=12	POS TARG 0.18,2.4 4		180 Secs (180 Secs) [==>]	[3]

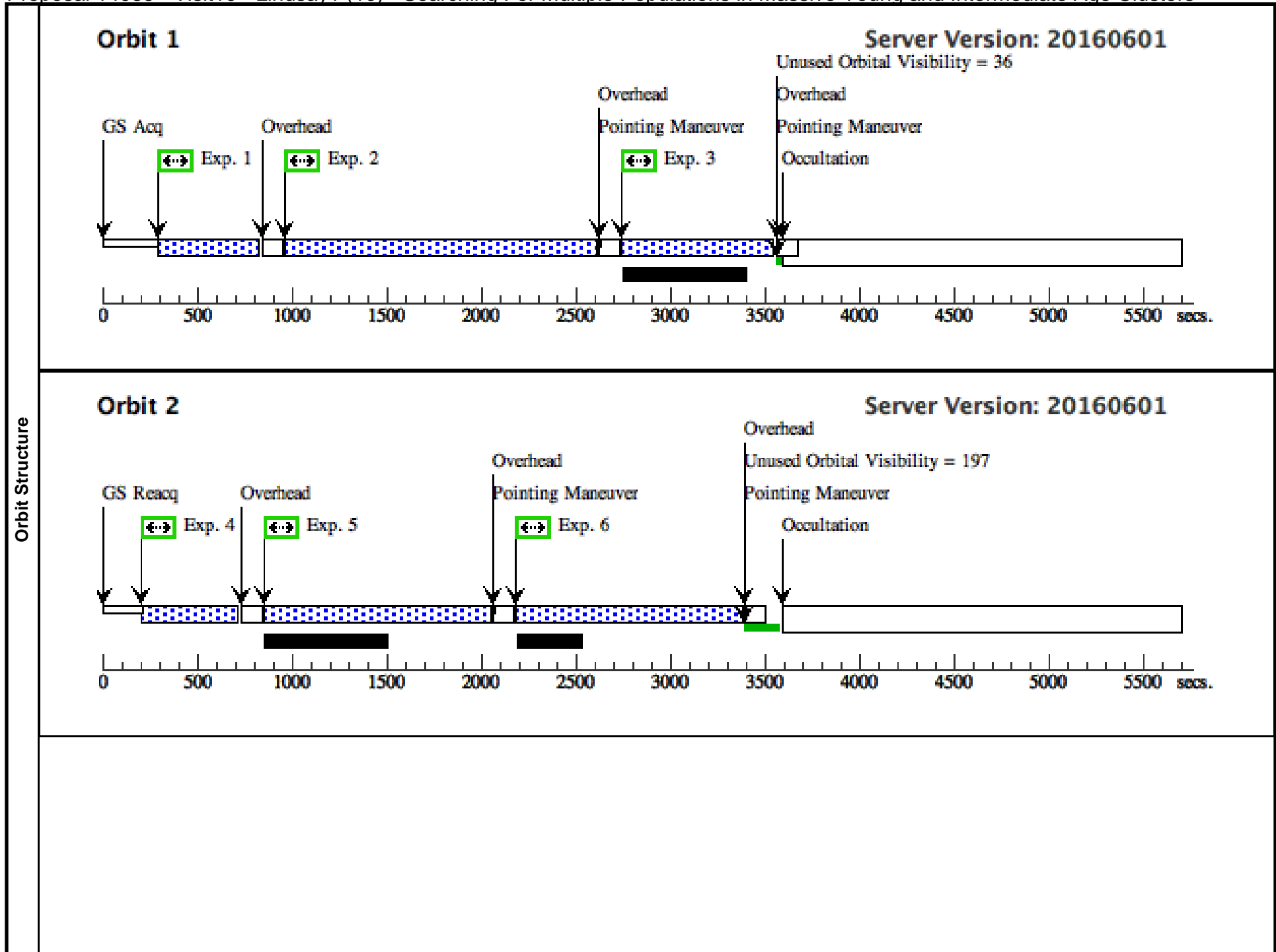


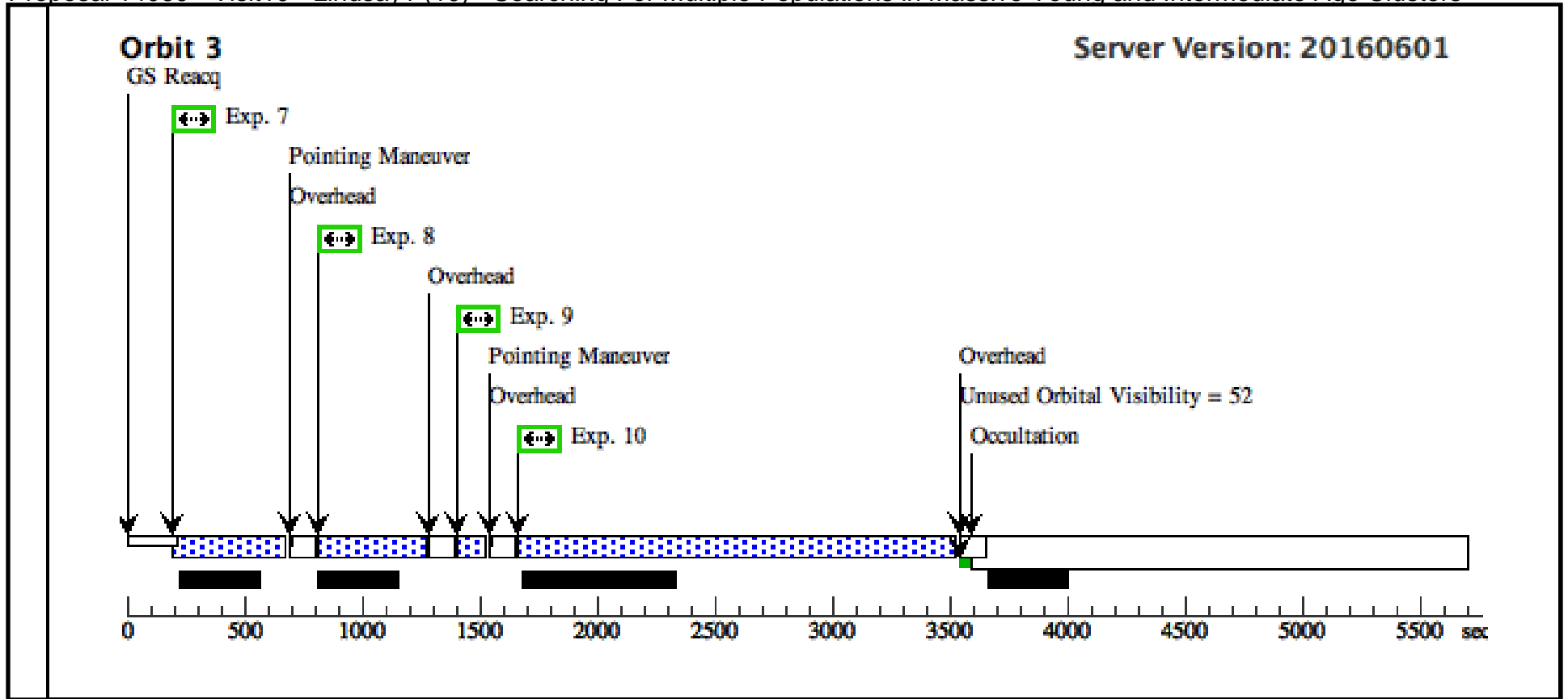


Proposal 14069 - Visit10 - Lindsay1 (10) - Searching For Multiple Populations in Massive Young and Intermediate Age Clusters

Wed Sep 07 20:55:36 GMT 2016

Fixed Targets	Visit									
	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(10)	LINDSAY1	RA: 00 03 54.4050 (.9766875d) Dec: -73 27 32.62 (-73.45906d) Equinox: J2000		V=14	Reference Frame: SIMBAD				
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F343N - 500	(10) LINDSAY1	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0,0		500 Secs (500 Secs) [==>]	[1]
	2	F343N - 165 0	(10) LINDSAY1	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=8	POS TARG 0,0		1650 Secs (1650 Secs) [==>]	[1]
	3	F343N - 800	(10) LINDSAY1	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0.18,2.4 4		800 Secs (800 Secs) [==>]	[1]
	4	F336W - 50 0	(10) LINDSAY1	WFC3/UVIS, ACCUM, UVIS1	F336W	FLASH=12	POS TARG 0,0		500 Secs (500 Secs) [==>]	[2]
	5	F336W - 12 00	(10) LINDSAY1	WFC3/UVIS, ACCUM, UVIS1	F336W	FLASH=8	POS TARG 0,0		1200 Secs (1200 Secs) [==>]	[2]
	6	F336W - 12 00	(10) LINDSAY1	WFC3/UVIS, ACCUM, UVIS1	F336W	FLASH=8	POS TARG 0.18,2.4 4		1200 Secs (1200 Secs) [==>]	[2]
	7	F438W - 46 0	(10) LINDSAY1	WFC3/UVIS, ACCUM, UVIS1	F438W	FLASH=8	POS TARG 0,0		460 Secs (460 Secs) [==>]	[3]
	8	F438W - 46 0	(10) LINDSAY1	WFC3/UVIS, ACCUM, UVIS1	F438W	FLASH=8	POS TARG 0.18,2.4 4		460 Secs (460 Secs) [==>]	[3]
	9	F438W - 12 0	(10) LINDSAY1	WFC3/UVIS, ACCUM, UVIS1	F438W	FLASH=12	POS TARG 0.18,2.4 4		120 Secs (120 Secs) [==>]	[3]
	10	F343N - 185 0	(10) LINDSAY1	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=8	POS TARG 0,0		1850 Secs (1850 Secs) [==>]	[3]

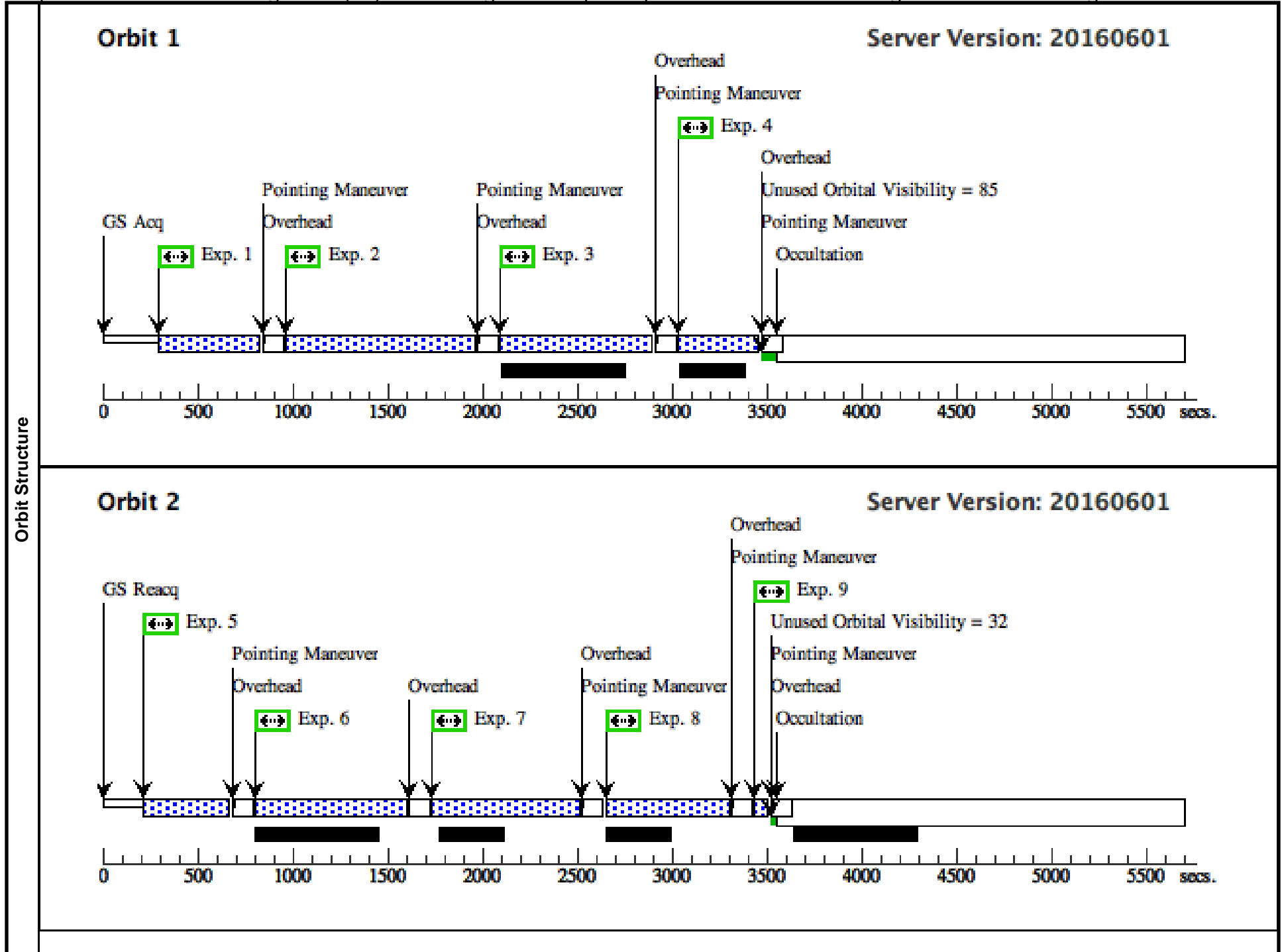


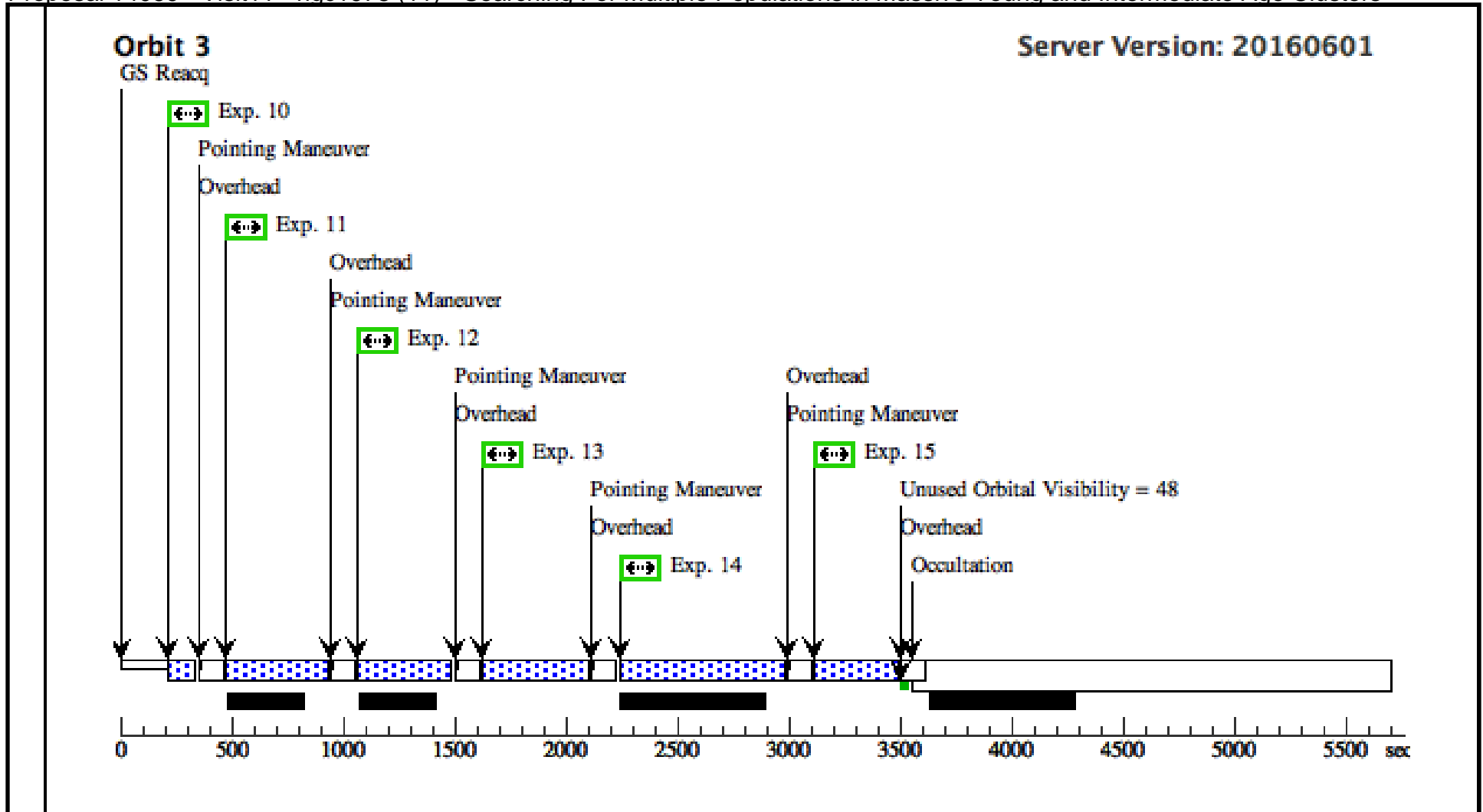


Proposal 14069 - Visit11 - ngc1978 (11) - Searching For Multiple Populations in Massive Young and Intermediate Age Clusters

Wed Sep 07 20:55:36 GMT 2016

Visit	Proposal 14069, Visit11 - ngc1978 (11), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: ORIENT 299D TO 317 D; ORIENT 254D TO 262 D Comments: Visit 11 - ngc361 is replaced by ngc1978 Change Request 85230, approved by TTRB										
	Fixed Targets	# Name Target Coordinates Targ. Coord. Corrections Fluxes Miscellaneous (11) NGC1978 RA: 05 28 48.9091 (82.2037879d) Dec: -66 14 17.79 (-66.23827d) Equinox: J2000 Comments: Coordinates were selected so as to yield good overlap with existing ACS images.									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
	1	F343N - 500	(11) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F343N	FLASH=12	POS TARG -1.0,-0.0 6			500 Secs (500 Secs) [==>]	[1]
	2	F343N - 100 0	(11) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F343N	FLASH=12	POS TARG 0.0,0.0			1000 Secs (1000 Secs) [==>]	[1]
	3	F343N - 80 0	(11) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F343N	FLASH=12	POS TARG 0.18,2.4 4			800 Secs (800 Secs) [==>]	[1]
	4	F343N - 425	(11) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F343N	FLASH=12	POS TARG 1.62,2.9 2			425 Secs (425 Secs) [==>]	[1]
	5	F343N - 450	(11) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F343N	FLASH=12	POS TARG 1.46,2.8 6			450 Secs (450 Secs) [==>]	[2]
	6	F343N - 800	(11) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F343N	FLASH=12	POS TARG 0.0,0.0			800 Secs (800 Secs) [==>]	[2]
	7	F438W - 75 0	(11) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F438W	FLASH=8	POS TARG 0,0			750 Secs (750 Secs) [==>]	[2]
	8	F438W - 65 0	(11) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F438W	FLASH=8	POS TARG 0.18,2.4 4			650 Secs (650 Secs) [==>]	[2]
	9	F438W - 75	(11) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F438W	FLASH=12	POS TARG -1.0,-0.0 6			75 Secs (75 Secs) [==>]	[2]
	10	F438W - 12 0	(11) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F438W	FLASH=12	POS TARG 1.62,2.9 2			120 Secs (120 Secs) [==>]	[3]
	11	F438W - 46 0	(11) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F438W	FLASH=8	POS TARG 0,0			460 Secs (460 Secs) [==>]	[3]
	12	F438W - 42 0	(11) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F438W	FLASH=8	POS TARG 1.46,2.8 6			420 Secs (420 Secs) [==>]	[3]
	13	F336W - 46 0	(11) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F336W	FLASH=12	POS TARG 0.18,2.4 4			460 Secs (460 Secs) [==>]	[3]
	14	F336W - 74 0	(11) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F336W	FLASH=12	POS TARG 0.0,0.0			740 Secs (740 Secs) [==>]	[3]
	15	F336W - 38 0	(11) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F336W	FLASH=12	POS TARG -1.0,-0.0 6			380 Secs (380 Secs) [==>]	[3]





Proposal 14069 - Visit12 - ngc121 (12) - Searching For Multiple Populations in Massive Young and Intermediate Age Clusters

Wed Sep 07 20:55:36 GMT 2016

Visit	Proposal 14069, Visit12 - ngc121 (12), completed				
	Diagnostic Status: No Diagnostics				
	Scientific Instruments: WFC3/UVIS				
	Special Requirements: ORIENT 215D TO 225 D				

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(12)	NGC121	RA: 00 26 49.0000 (6.7041667d) Dec: -71 32 7.99 (-71.53555d) Equinox: J2000		V=11.24	Reference Frame: SIMBAD
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>						

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F343N - 500	(12) NGC121	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0,0; GS ACQ SCENARI O BASE1B3		500 Secs (500 Secs) [==>]	[1]
	2	F343N - 165 0	(12) NGC121	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=8	POS TARG 0,0		1650 Secs (1650 Secs) [==>]	[1]
	3	F343N - 800	(12) NGC121	WFC3/UVIS, ACCUM, UVIS1	F343N	FLASH=12	POS TARG 0.18,2.4 4		800 Secs (800 Secs) [==>]	[1]

