



15630 - A Full Characterisation of the Multiple Population Properties of Young Globular Clusters

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	(2) NGC416	WFC3/UVIS	3	27-Jun-2019 12:00:29.0	yes
02	(2) NGC416	WFC3/UVIS	3	27-Jun-2019 12:00:31.0	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>
03	(2) NGC416	WFC3/UVIS	3	27-Jun-2019 12:00:32.0	yes
04	(3) CL-LINDSAY-1	WFC3/UVIS	3	27-Jun-2019 12:00:33.0	yes
05	(3) CL-LINDSAY-1	WFC3/UVIS	3	27-Jun-2019 12:00:34.0	yes
06	(3) CL-LINDSAY-1	WFC3/UVIS	3	27-Jun-2019 12:00:35.0	yes
08	(4) NGC1783	WFC3/UVIS	3	27-Jun-2019 12:00:36.0	yes
09	(5) NGC2121	WFC3/UVIS	3	27-Jun-2019 12:00:36.0	yes
10	(5) NGC2121	WFC3/UVIS	3	27-Jun-2019 12:00:37.0	yes
11	(5) NGC2121	WFC3/UVIS	1	27-Jun-2019 12:00:39.0	yes
12	(1) NGC1978	WFC3/UVIS	3	27-Jun-2019 12:00:39.0	yes
13	(1) NGC1978	WFC3/UVIS	3	27-Jun-2019 12:00:40.0	yes
14	(1) NGC1978	WFC3/UVIS	1	27-Jun-2019 12:00:41.0	yes

35 Total Orbits Used

ABSTRACT

Recent HST surveys of massive stellar clusters in the Galaxy and Magellanic Clouds have opened an entirely new window on the phenomenon of multiple populations (MPs, i.e. star-to-star abundance variations within clusters). First, the HST Galactic GC UV Legacy survey has found a strong trend between the present day mass of ancient globular clusters (GCs) and the properties of the multiple populations within them, namely an increase in the fraction of chemically anomalous (a.k.a. enriched or second generation) stars as a function of cluster mass. Secondly, the Magellanic Cloud survey has found a strong correlation between the cluster age and the properties of the MPs (at a fixed mass), with clusters younger than 2 Gyr not showing abundance variations and clusters above this age, showing them. Additionally, from 2 to ~10 Gyr the survey found an increase in the abundance spread ($[N/Fe]$) with increasing age.

These two surveys applied different strategies so that unfortunately the results are not directly comparable. Here we propose to put the two surveys on the same footing by observing a sub-sample of the Magellanic Cloud clusters with the F275W filter. By using the newly developed "chromosome maps" (exploiting the F275W, F336W, F438W, and F814W images) we will be able to directly compare the young, intermediate and ancient clusters in a homogeneous manner. It will also allow us to trace the evolution of MPs (in terms of their detailed abundances in N, O, and He), as a function of age. These observations will hopefully lead to new theories for the origin of MPs in an entirely unexpected direction from all previous work.

OBSERVING DESCRIPTION

We propose to obtain imaging of 5 massive star clusters within the LMC/SMC, spanning a wide range of ages (2-8 Gyr), in order to search for elemental abundance spreads and multiple populations. All 5 clusters will be observed in the F275W, and 2 clusters in the F814W WFC3/UVIS filters. These filters will be additinal to alredy exciting early observations of the same clusters in F336W, F343N and F438W WFC3/UVIS filters, which will provide accurate color-magnitude diagrams (CMD) for studies of these phenomena and build a "chromosome maps" in prseudo-color-color diagrams (F275W, F336W, F438W and F814W).

A CMD for such a large range of stellar ages covers everything from red and very bright red 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 in F814W filters and to reach a sufficient depth beyond the main-sequence turn-off using long exposures. It is also important for us to reach S/N~6 per single exposure for cluster RGB base mag limit and ~14-15 for the brighter in F275W WFC3/UVIS filter exposures. To cover the gap between the two WFC3/UVIS CCD, chips, we are using multi- dithered pointings with the sub-pixles steps in X and Y directions. In order to maximize the overlap with early observations 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:

NGC416: Visits 01-03, Min=250, Max=260 decimal degree

Lindsay1: Visits 04-06, Min=255, Max=265 decimal degree

NGC1783: Visits 07-08, Min=290, Max=300 decimal degree

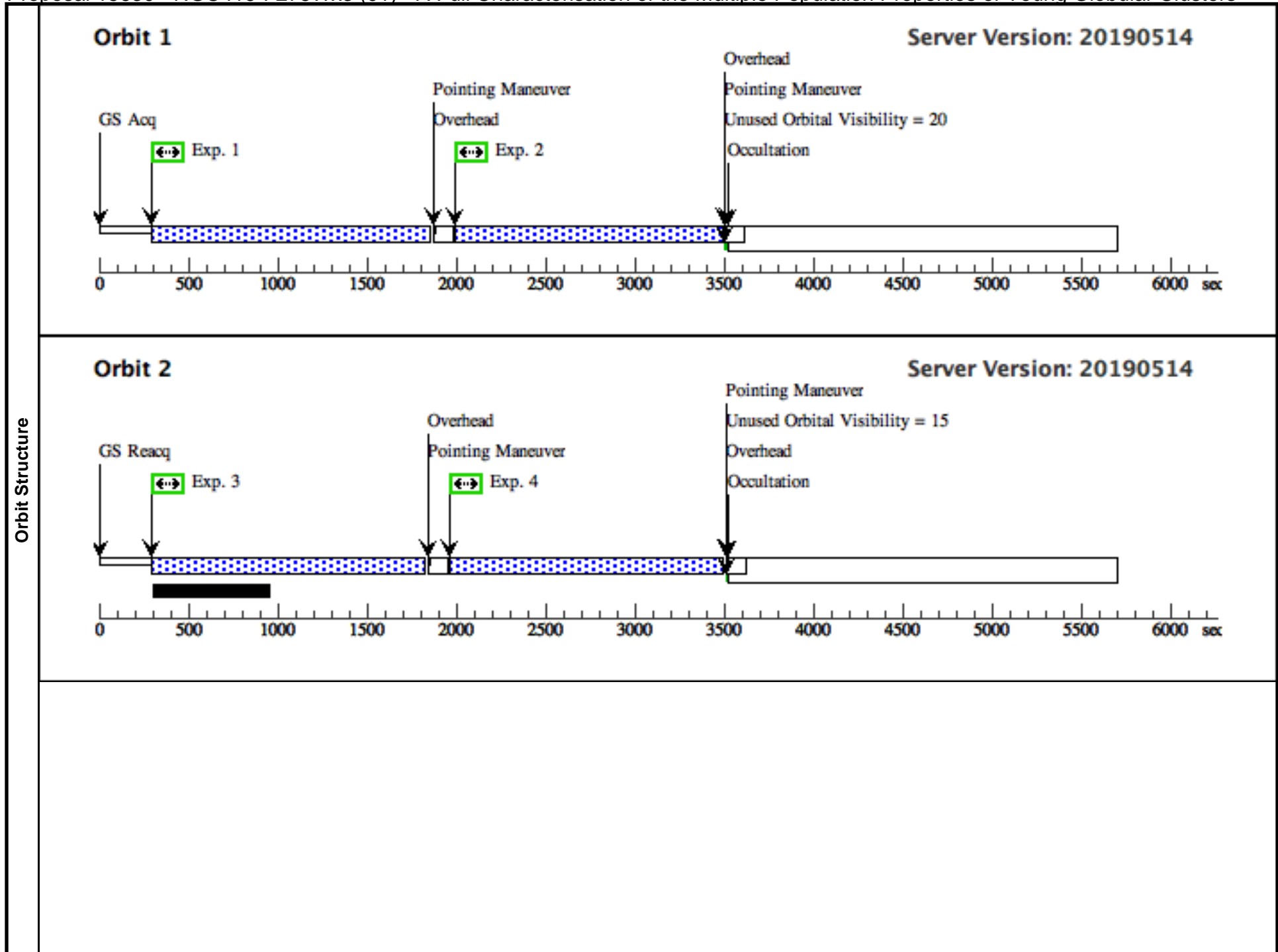
NGC2121: Visits 09-11, Min=195, Max=205 decimal degree

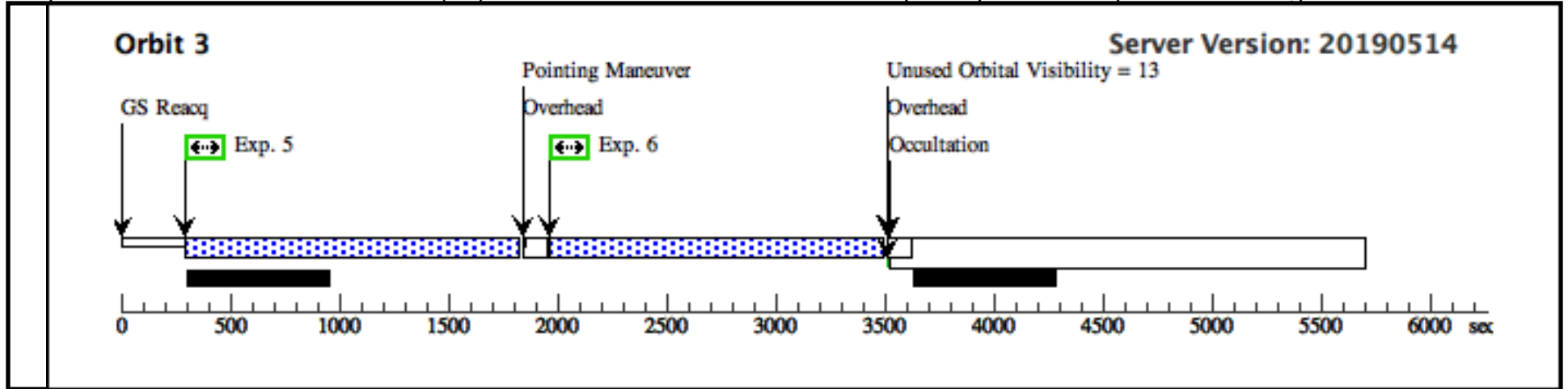
NGC1978: Visits 11-14, Min=260, Max=270 decimal degree

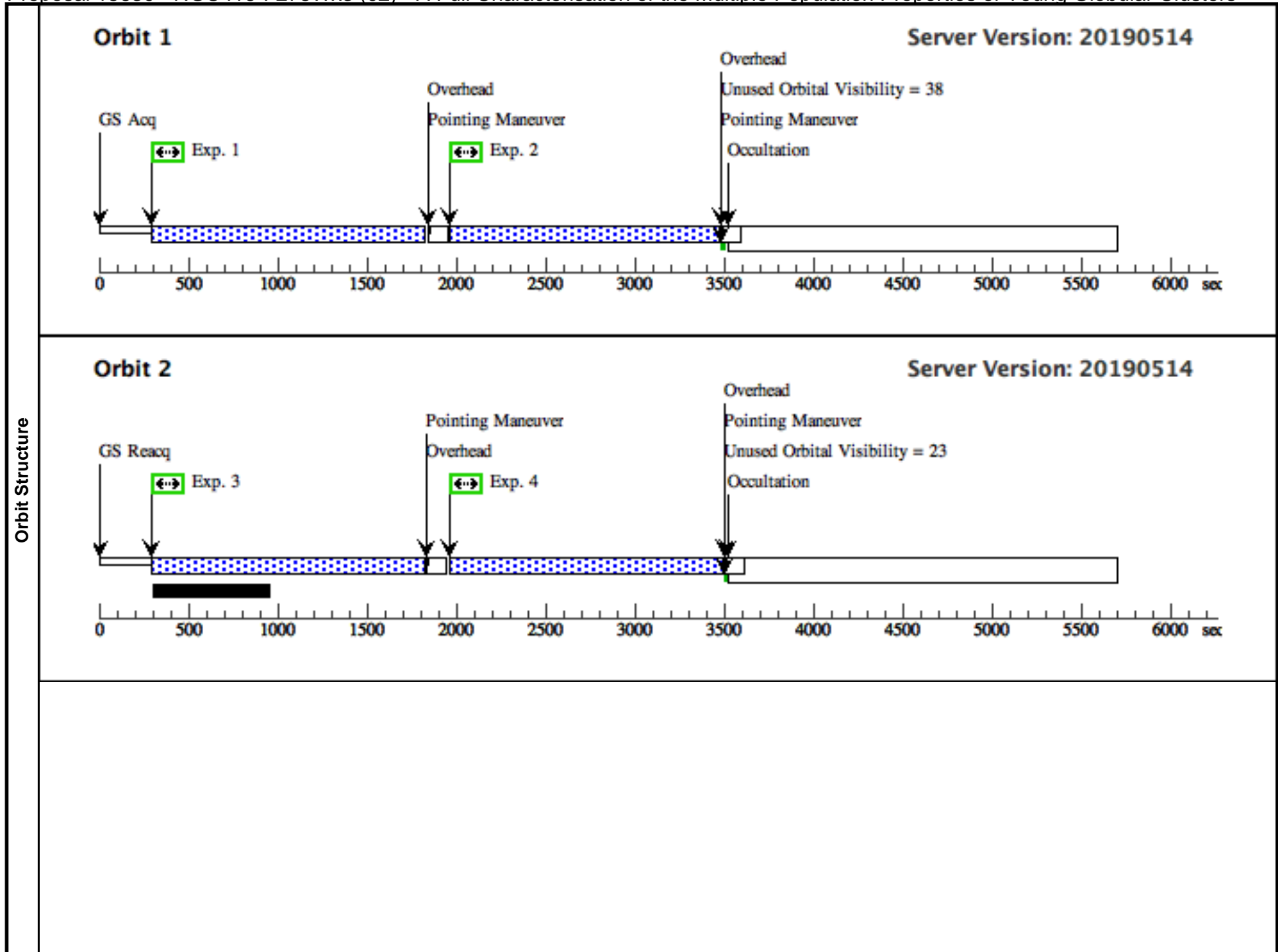
Proposal 15630 - NGC416-F275Wx3 (01) - A Full Characterisation of the Multiple Population Properties of Young Globular Clusters

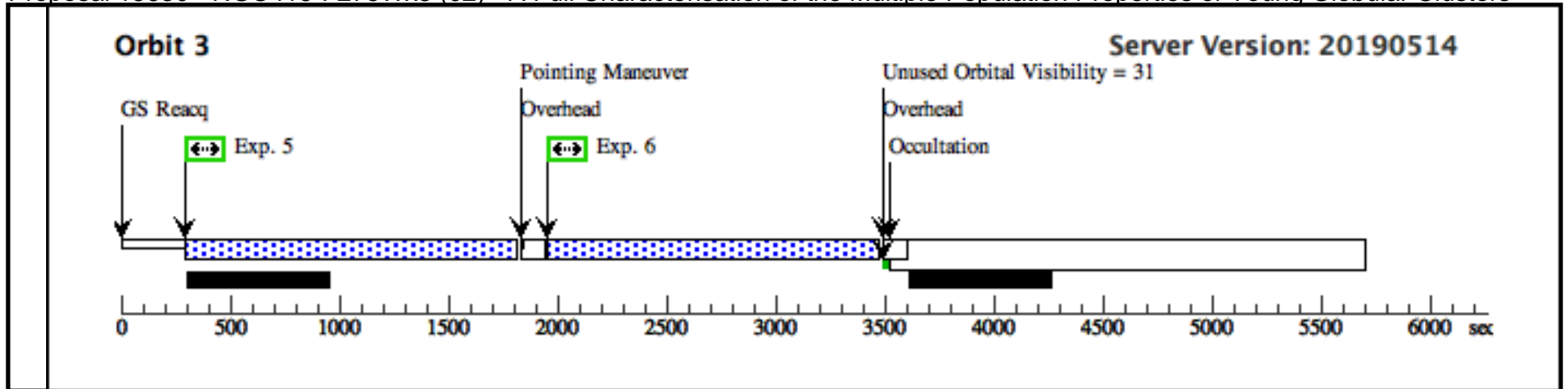
Thu Jun 27 16:00:42 GMT 2019

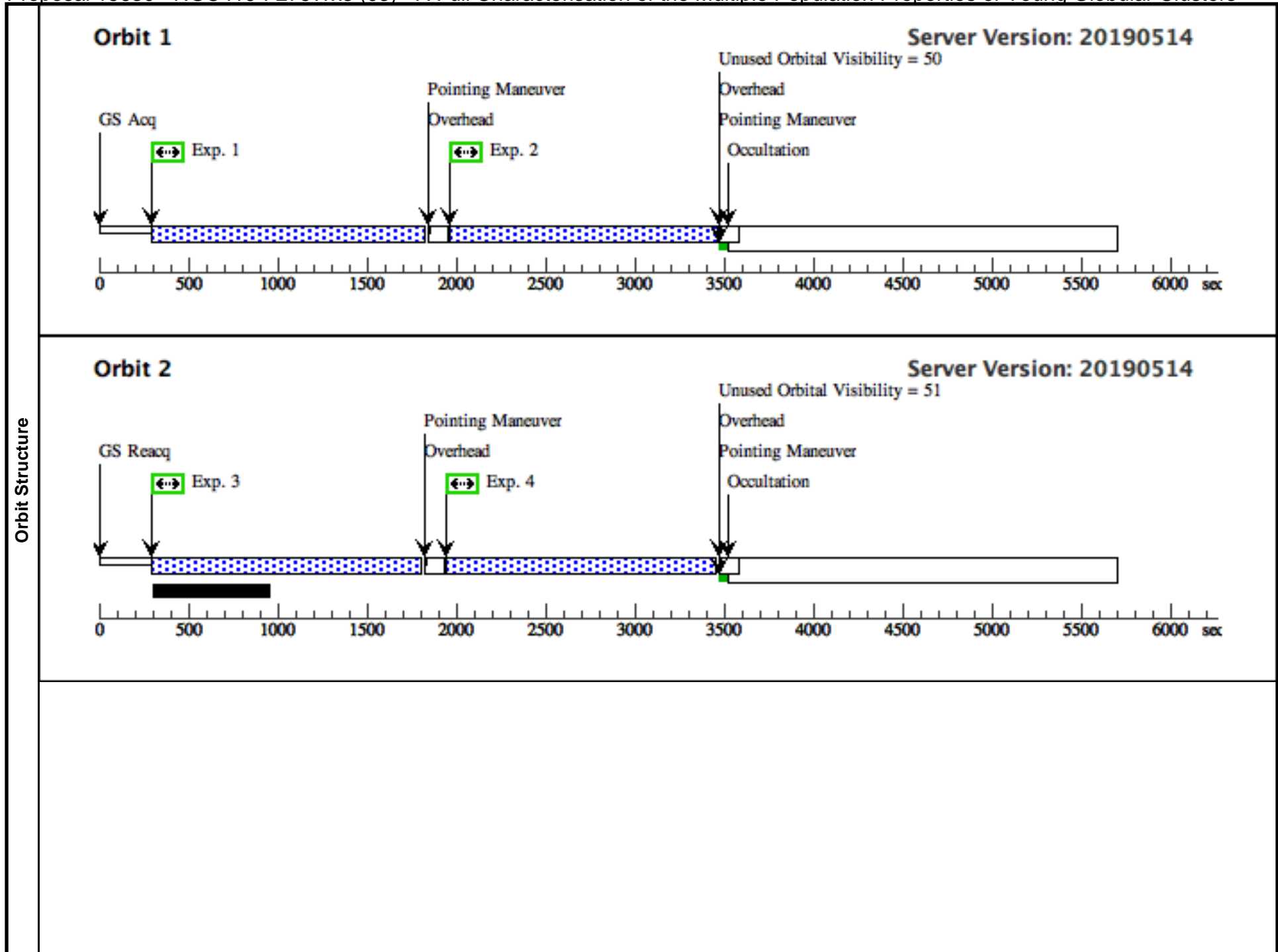
Visit	Proposal 15630, NGC416-F275Wx3 (01), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: ORIENT 250D TO 280 D									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(2)	NGC416	RA: 01 07 59.3027 (16.9970946d) Dec: -72 21 17.91 (-72.35497d) Equinox: J2000		V=11.76	Reference Frame: SIMBAD				
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Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F275W-2x1 500	(2) NGC416	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG -0.1,-0.0 6		1530 Secs (1530 Secs) [==>]	[1]
	2	F275W-2x1 500	(2) NGC416	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG 1.62,2.9 2		1500 Secs (1500 Secs) [==>]	[1]
	3	F275W-2x1 500	(2) NGC416	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG 0,0		1533 Secs (1533 Secs) [==>]	[2]
	4	F275W-2x1 500	(2) NGC416	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG 1.46,2.8 6		1533 Secs (1533 Secs) [==>]	[2]
	5	F275W-2x1 500	(2) NGC416	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG 0.10,0.1 6		1534 Secs (1534 Secs) [==>]	[3]
	6	F275W-2x1 500	(2) NGC416	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG -0.10,-0. 16		1534 Secs (1534 Secs) [==>]	[3]

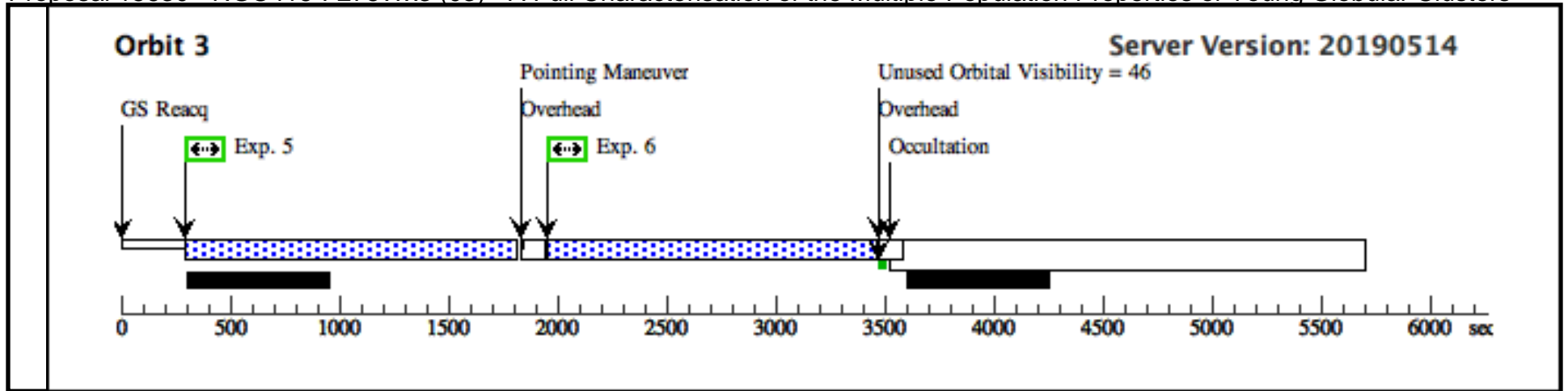






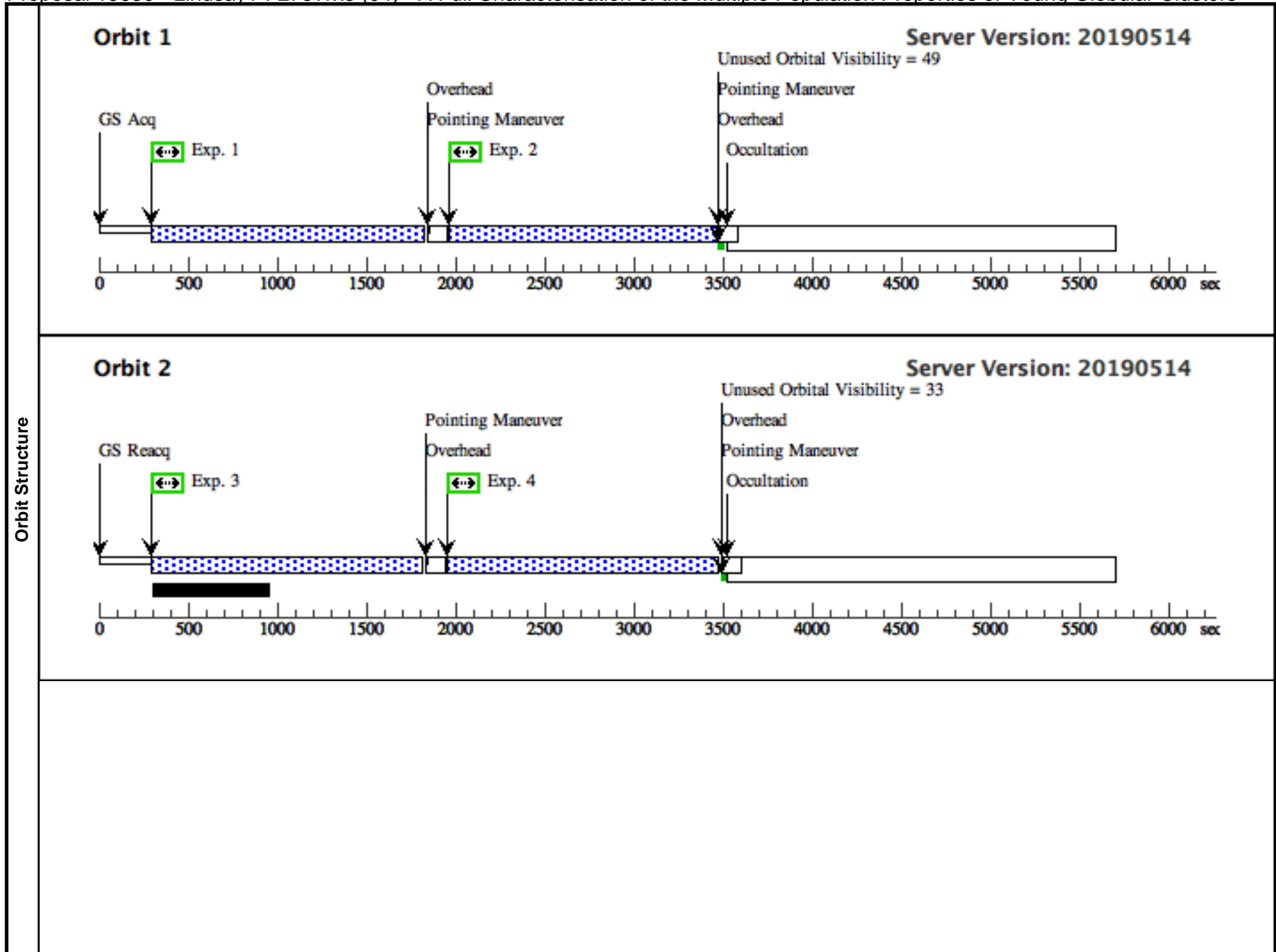


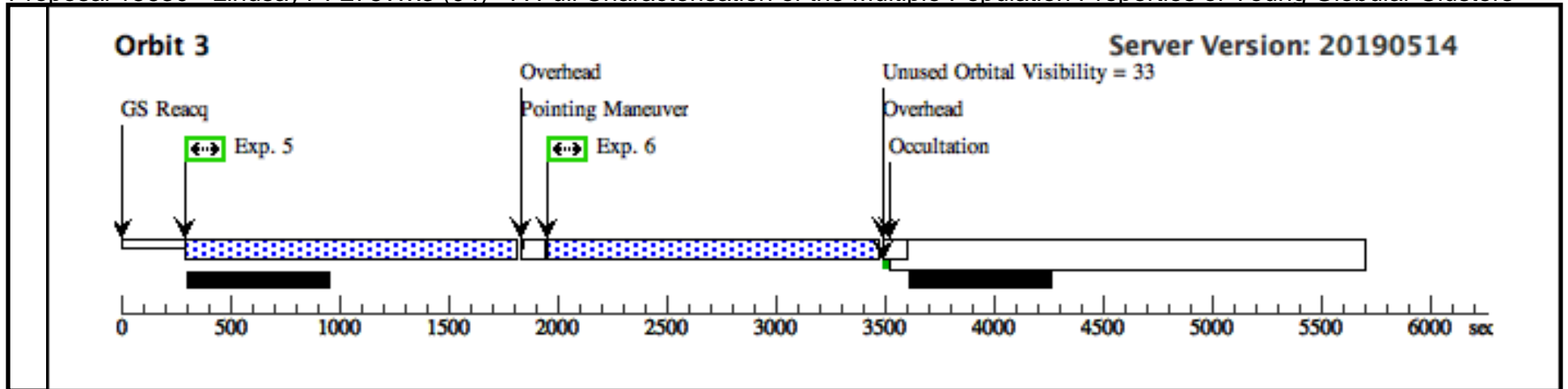




Proposal 15630 - Lindsay1-F275Wx3 (04) - A Full Characterisation of the Multiple Population Properties of Young Globular Clusters

Visit	Proposal 15630, Lindsay1-F275Wx3 (04), completed Thu Jun 27 16:00:43 GMT 2019 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: ORIENT 255D TO 265 D																											
	Fixed Targets	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(3)</td> <td>CL-LINDSAY-1</td> <td>RA: 00 03 53.0766 (.9711525d) Dec: -73 28 10.45 (-73.46957d) Equinox: J2000</td> <td></td> <td>V=11.6</td> <td>Reference Frame: SIMBAD</td> </tr> <tr> <td colspan="6"> <i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=STELLAR CLUSTER Description=[GLOBULAR CLUSTER] Extended=NO </td> </tr> </tbody> </table>										#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(3)	CL-LINDSAY-1	RA: 00 03 53.0766 (.9711525d) Dec: -73 28 10.45 (-73.46957d) Equinox: J2000		V=11.6	Reference Frame: SIMBAD	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=STELLAR CLUSTER Description=[GLOBULAR CLUSTER] Extended=NO				
#		Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous																						
(3)	CL-LINDSAY-1	RA: 00 03 53.0766 (.9711525d) Dec: -73 28 10.45 (-73.46957d) Equinox: J2000		V=11.6	Reference Frame: SIMBAD																							
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=STELLAR CLUSTER Description=[GLOBULAR CLUSTER] Extended=NO																												
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit																		
	1	F275W-2x1 500	(3) CL-LINDSAY-1	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG -0.1,-0.0 6			1501 Secs (1501 Secs) [==>]	[1]																	
	2	F275W-2x1 500	(3) CL-LINDSAY-1	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG 1.62,2.9 2			1500 Secs (1500 Secs) [==>]	[1]																	
	3	F275W-2x1 500	(3) CL-LINDSAY-1	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG 1.46,2.8 6			1523 Secs (1523 Secs) [==>]	[2]																	
	4	F275W-2x1 500	(3) CL-LINDSAY-1	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG 0.10,0.1 6			1525 Secs (1525 Secs) [==>]	[2]																	
	5	F275W-2x1 500	(3) CL-LINDSAY-1	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG 0,0			1523 Secs (1523 Secs) [==>]	[3]																	
	6	F275W-2x1 500	(3) CL-LINDSAY-1	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG 0.10,0.0 6			1525 Secs (1525 Secs) [==>]	[3]																	

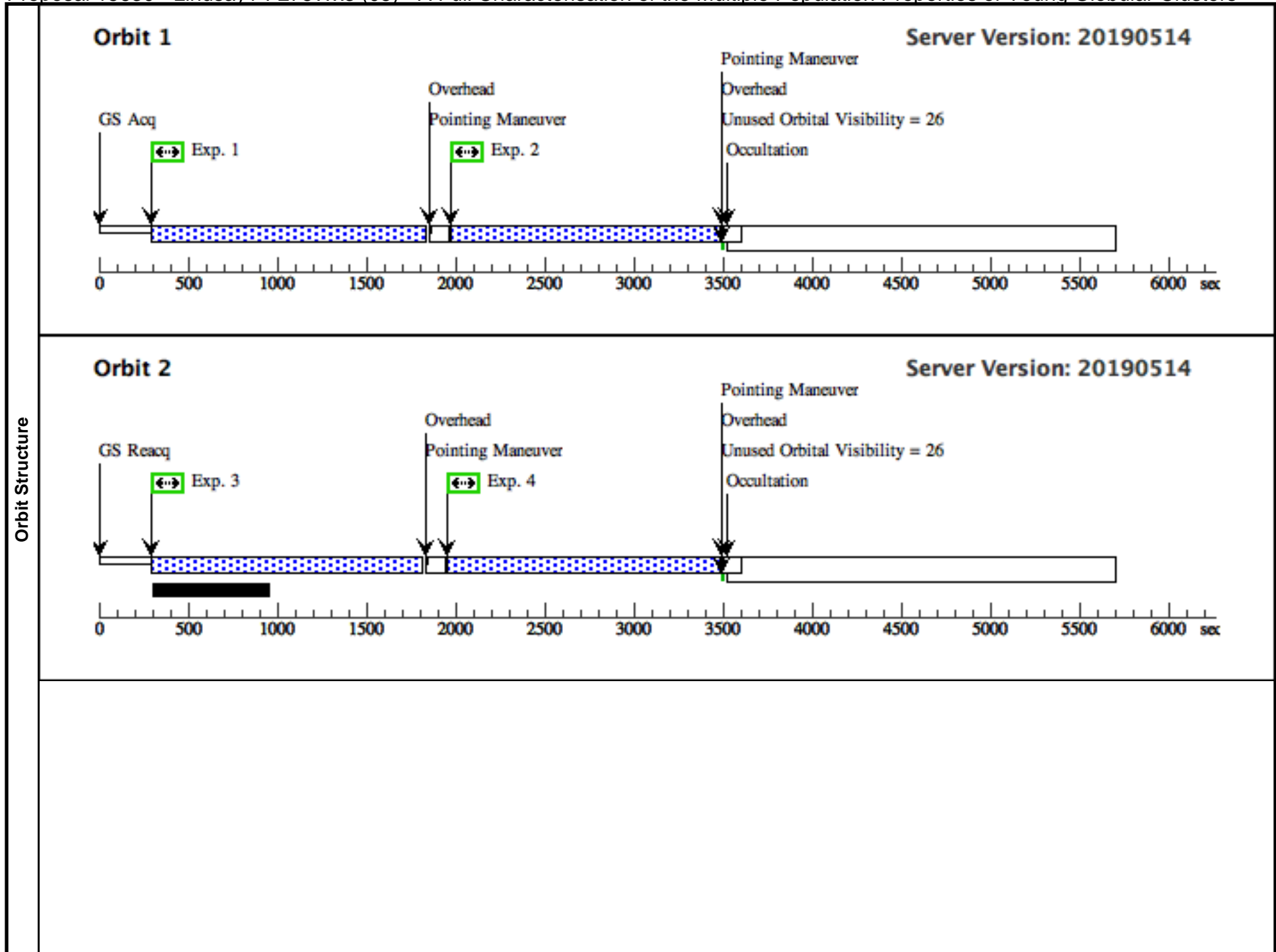


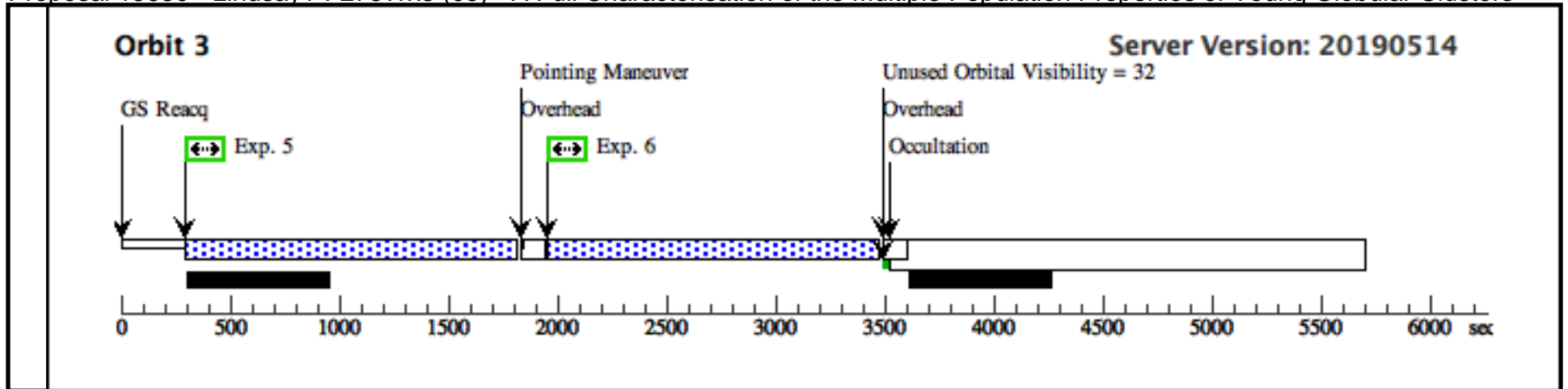


Proposal 15630 - Lindsay1-F275Wx3 (05) - A Full Characterisation of the Multiple Population Properties of Young Globular Clusters

Thu Jun 27 16:00:43 GMT 2019

Visit	Proposal 15630, Lindsay1-F275Wx3 (05), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: ORIENT 255D TO 275 D									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(3)	CL-LINDSAY-1	RA: 00 03 53.0766 (.9711525d) Dec: -73 28 10.45 (-73.46957d) Equinox: J2000		V=11.6	Reference Frame: SIMBAD				
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=STELLAR CLUSTER Description=[GLOBULAR CLUSTER] Extended=NO									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F275W-2x1 500	(3) CL-LINDSAY-1	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG -1.62,-2. 92		1512 Secs (1512 Secs)	
									[==>]	[1]
	2	F275W-2x1 500	(3) CL-LINDSAY-1	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG -1.46,-2. 86		1512 Secs (1512 Secs)	
									[==>]	[1]
	3	F275W-2x1 500	(3) CL-LINDSAY-1	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG -0.1,-0.1 6		1525 Secs (1525 Secs)	
									[==>]	[2]
4	F275W-2x1 500	(3) CL-LINDSAY-1	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG 0.006,-0. .053		1530 Secs (1530 Secs)		
								[==>]	[2]	
5	F275W-2x1 500	(3) CL-LINDSAY-1	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG 0.0,0.0		1524 Secs (1524 Secs)		
								[==>]	[3]	
6	F275W-2x1 500	(3) CL-LINDSAY-1	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG -0.09,-0. 098		1525 Secs (1525 Secs)		
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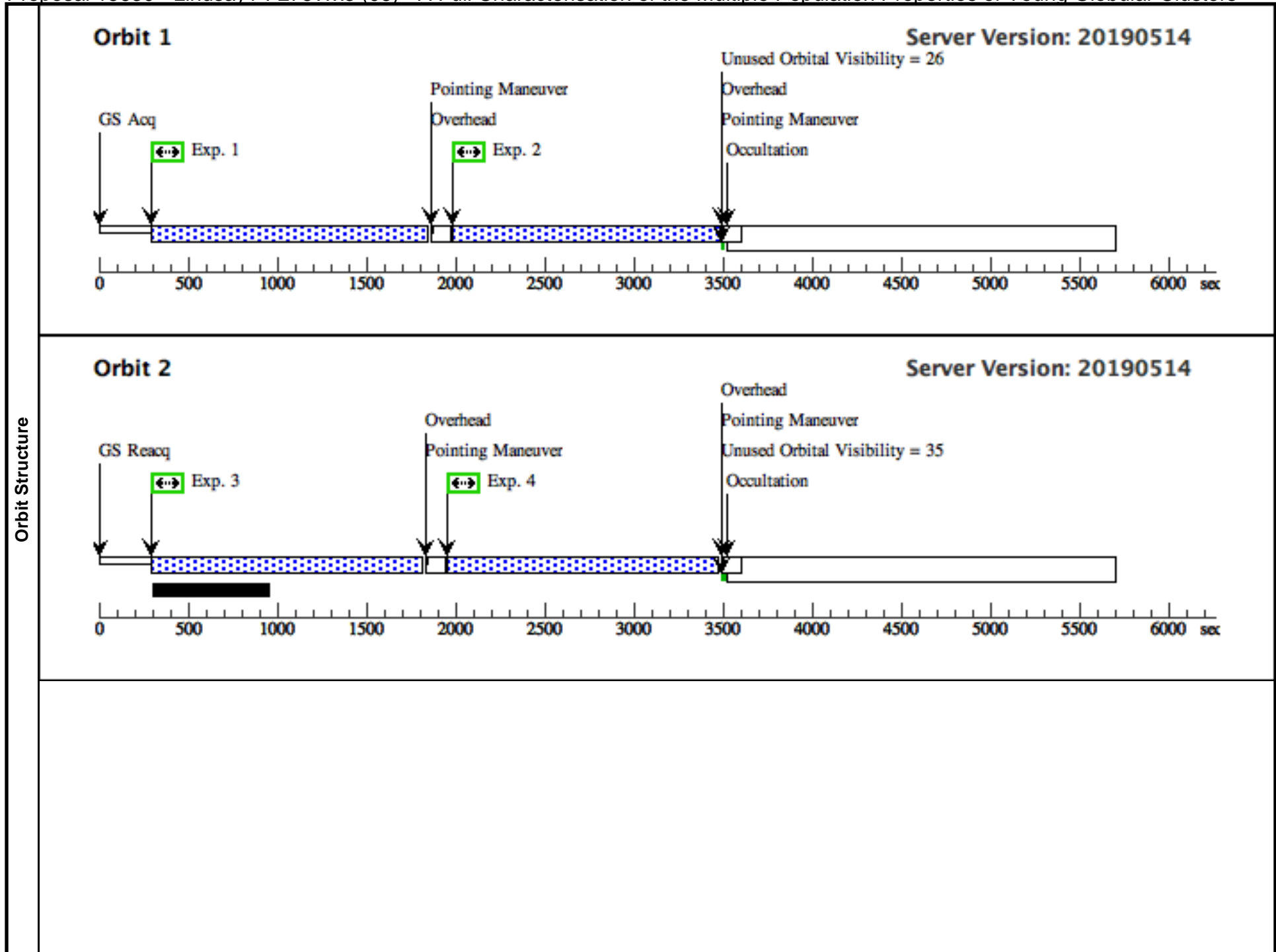


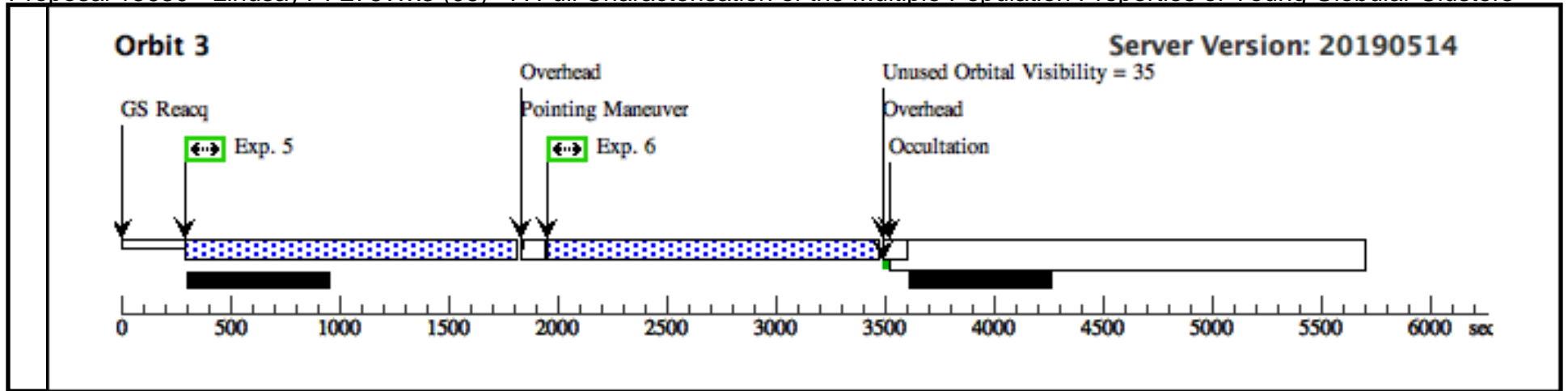


Proposal 15630 - Lindsay1-F275Wx3 (06) - A Full Characterisation of the Multiple Population Properties of Young Globular Clusters

Thu Jun 27 16:00:43 GMT 2019

Visit	Proposal 15630, Lindsay1-F275Wx3 (06), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: ORIENT 255D TO 275 D									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(3)	CL-LINDSAY-1	RA: 00 03 53.0766 (.9711525d) Dec: -73 28 10.45 (-73.46957d) Equinox: J2000		V=11.6	Reference Frame: SIMBAD				
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=STELLAR CLUSTER Description=[GLOBULAR CLUSTER] Extended=NO									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F275W-2x1 500	(3) CL-LINDSAY-1	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG 0.098,0.046		1524 Secs (1524 Secs)	
									[==>]	[1]
	2	F275W-2x1 500	(3) CL-LINDSAY-1	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG 0.092,0.098		1500 Secs (1500 Secs)	
									[==>]	[1]
	3	F275W-2x1 500	(3) CL-LINDSAY-1	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG 0.19,0.144		1523 Secs (1523 Secs)	
									[==>]	[2]
4	F275W-2x1 500	(3) CL-LINDSAY-1	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG -0.092,-0.098		1523 Secs (1523 Secs)		
								[==>]	[2]	
5	F275W-2x1 500	(3) CL-LINDSAY-1	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG -0.006,0.052		1523 Secs (1523 Secs)		
								[==>]	[3]	
6	F275W-2x1 500	(3) CL-LINDSAY-1	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG 0.0,0.0		1523 Secs (1523 Secs)		
								[==>]	[3]	

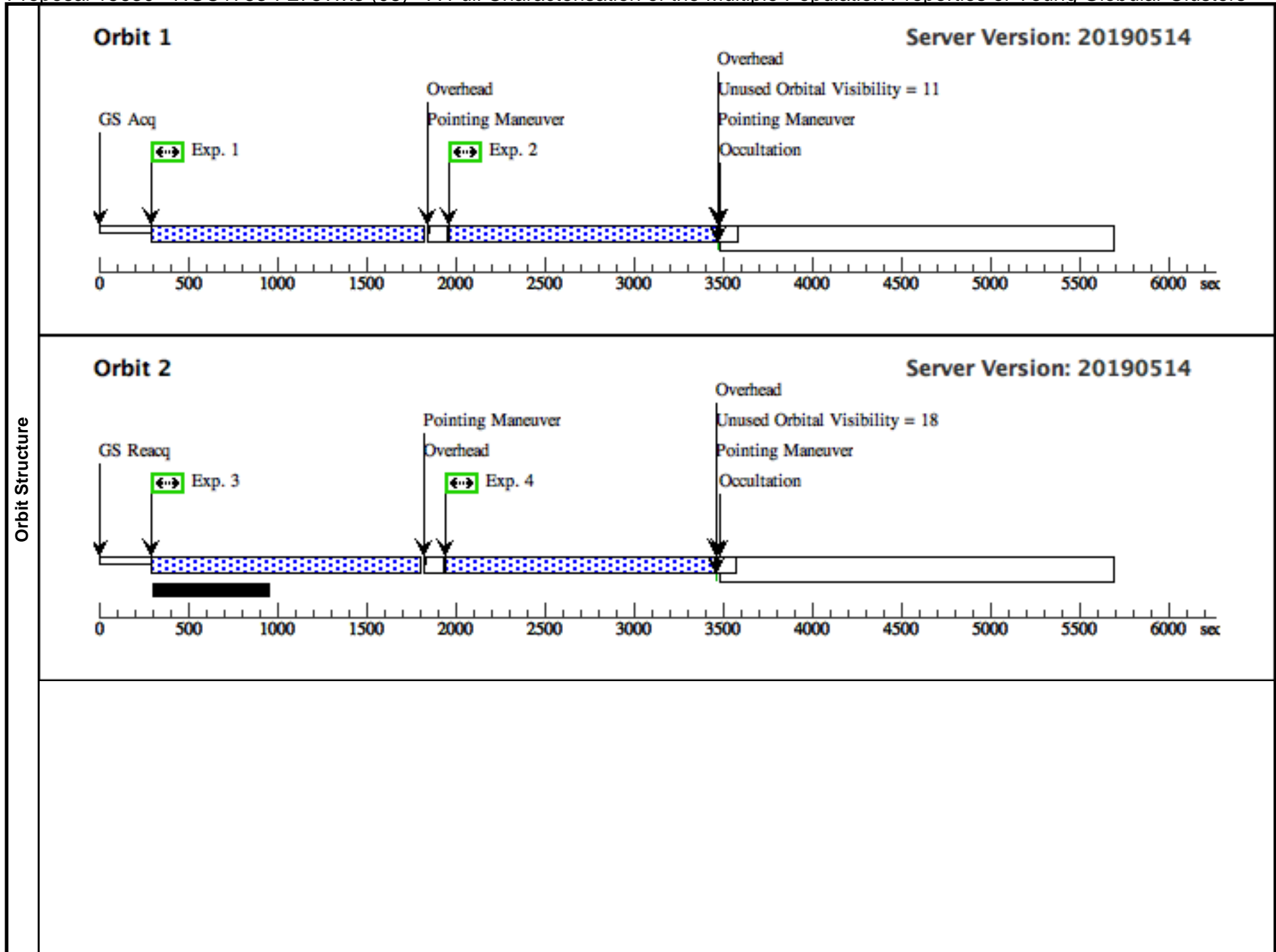


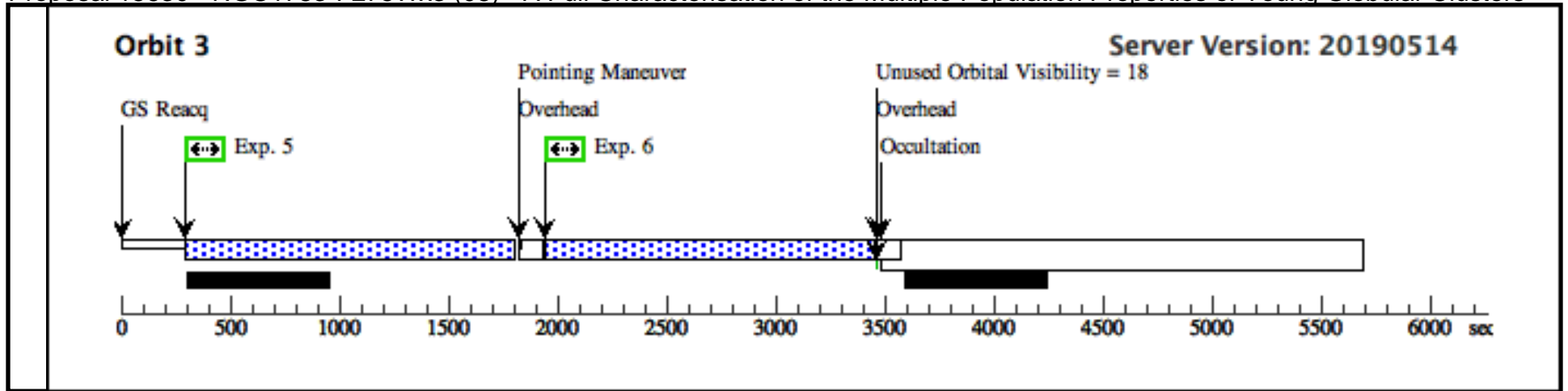


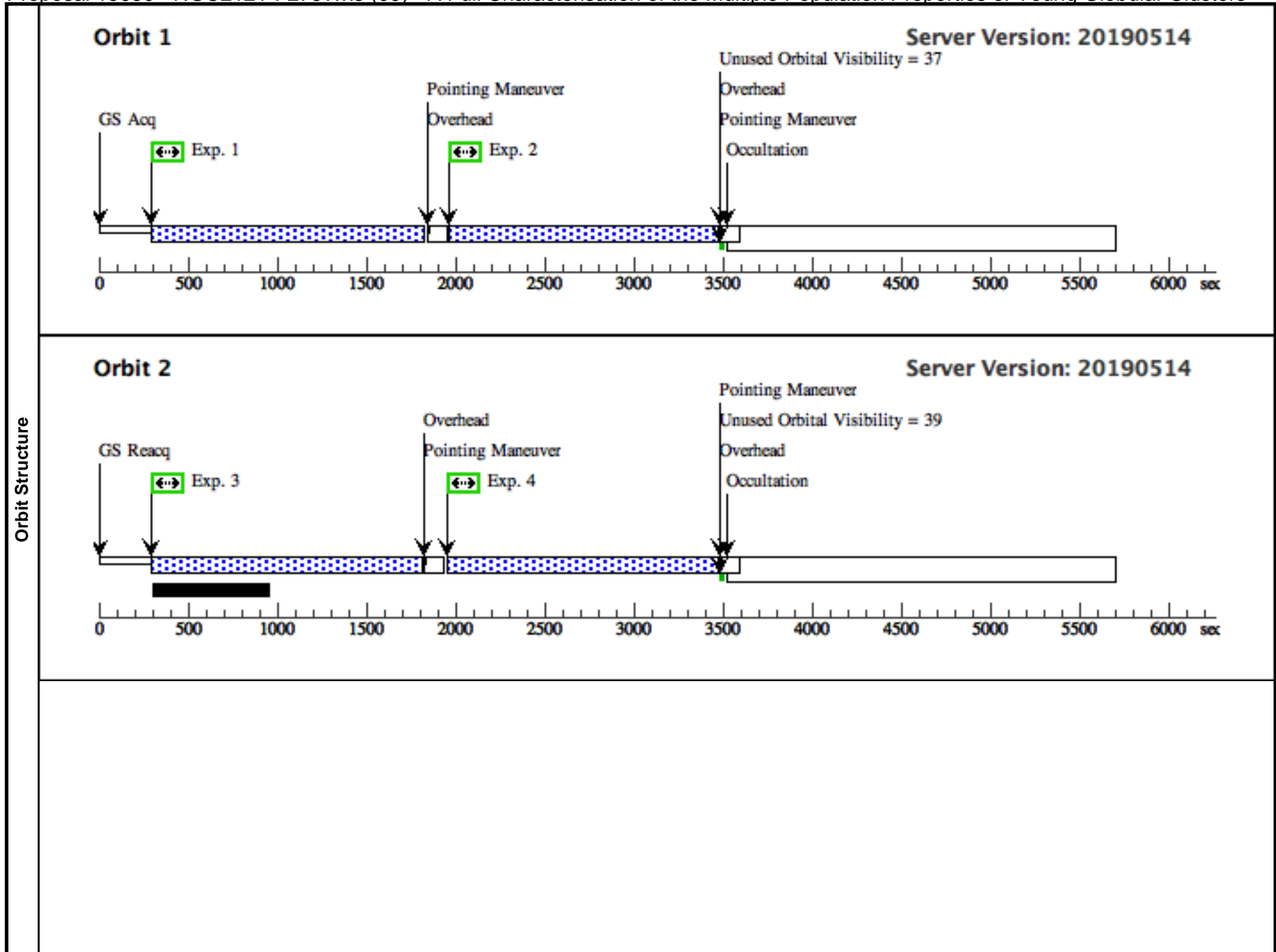
Proposal 15630 - NGC1783-F275Wx3 (08) - A Full Characterisation of the Multiple Population Properties of Young Globular Clusters

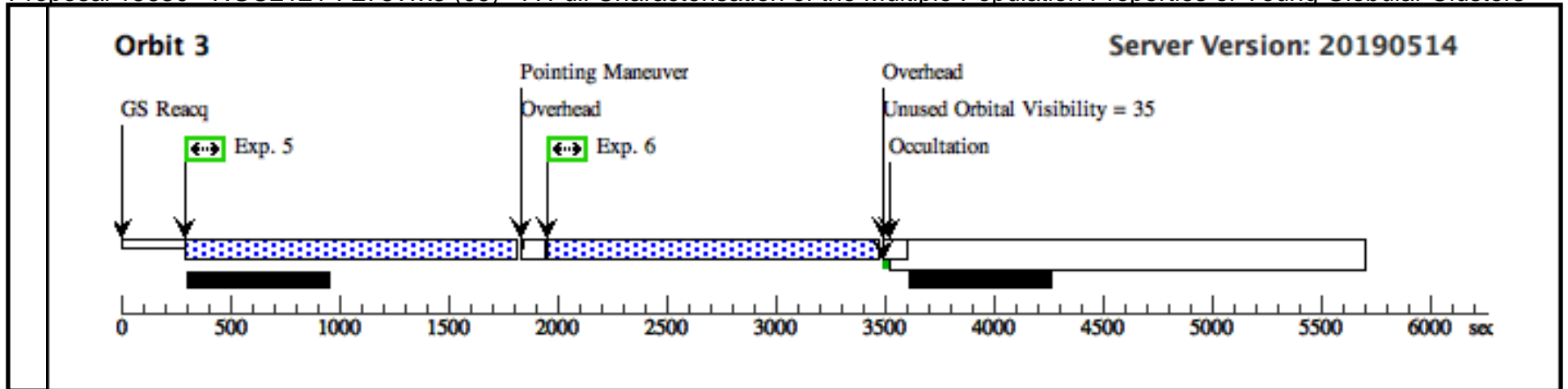
Thu Jun 27 16:00:43 GMT 2019

Visit	Proposal 15630, NGC1783-F275Wx3 (08), scheduling Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: ORIENT 290D TO 303 D									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(4)	NGC1783	RA: 04 59 10.2820 (74.7928417d) Dec: -65 59 17.60 (-65.98822d) Equinox: J2000		V=10.93	Reference Frame: SIMBAD				
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	1	F275W-2x1 500	(4) NGC1783	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG -0.092,- 0.098		1500 Secs (1500 Secs) [==>]	[1]
	2	F275W-2x1 500	(4) NGC1783	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG -0.006,0 .052		1500 Secs (1500 Secs) [==>]	[1]
	3	F275W-2x1 500	(4) NGC1783	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG 1.62,2.9 2		1512 Secs (1512 Secs) [==>]	[2]
	4	F275W-2x1 500	(4) NGC1783	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG 0.191,0. 144		1512 Secs (1512 Secs) [==>]	[2]
	5	F275W-2x1 500	(4) NGC1783	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG 0,0		1512 Secs (1512 Secs) [==>]	[3]
	6	F275W-2x1 500	(4) NGC1783	WFC3/UVIS, ACCUM, UVIS1	F275W	FLASH=10	POS TARG 0.092,0. 098		1512 Secs (1512 Secs) [==>]	[3]





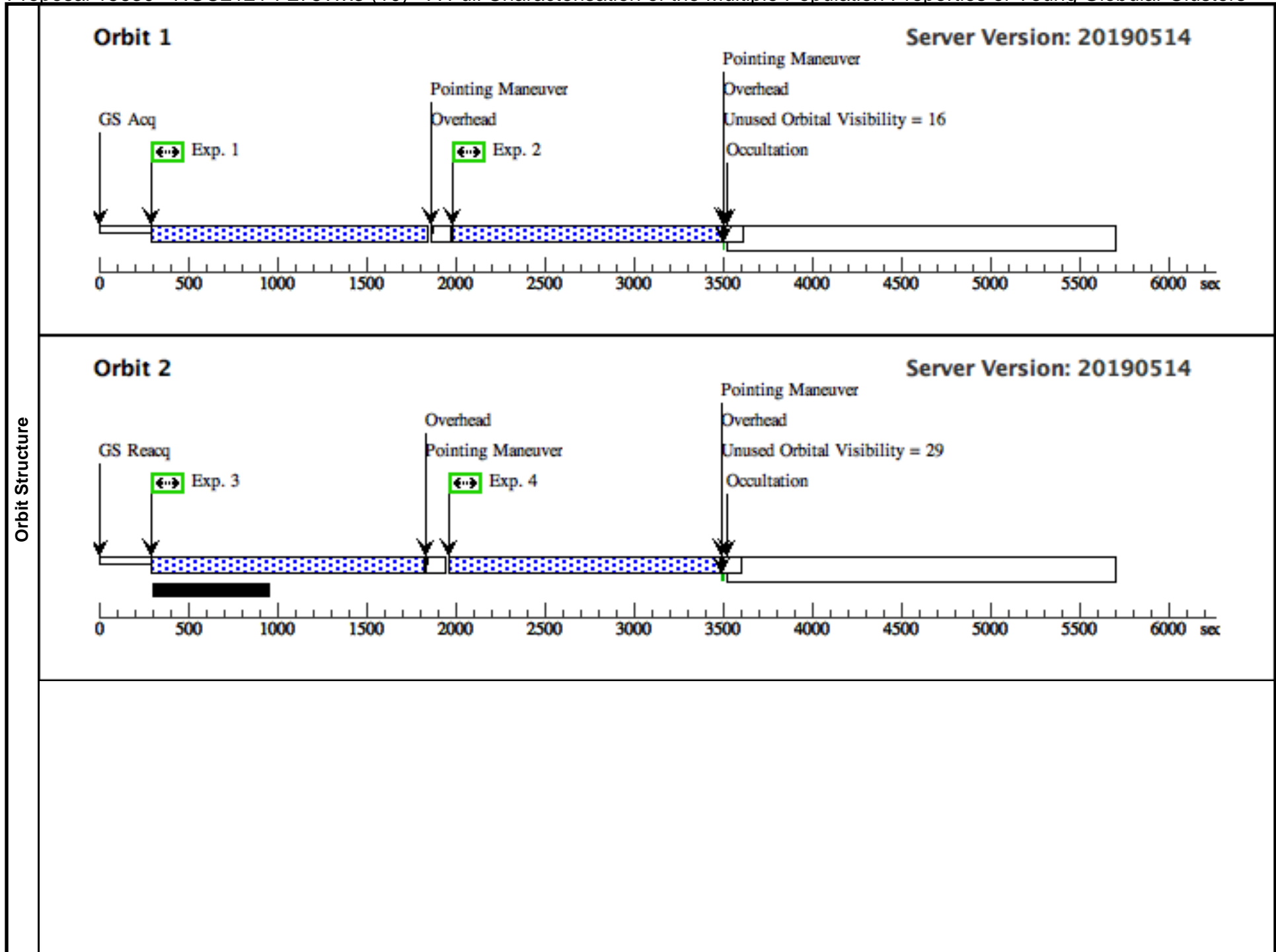


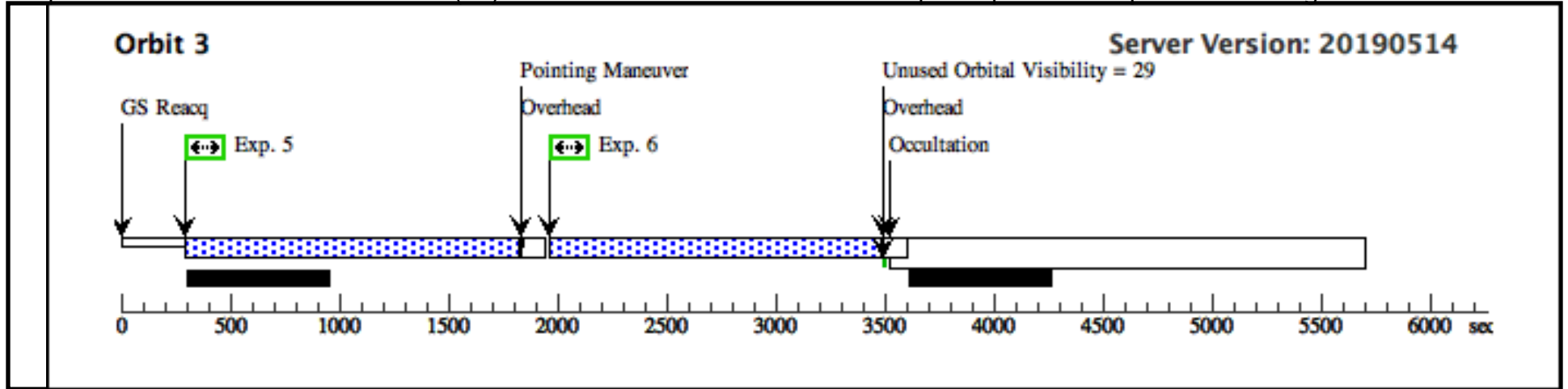


Proposal 15630 - NGC2121-F275Wx3 (10) - A Full Characterisation of the Multiple Population Properties of Young Globular Clusters

Thu Jun 27 16:00:43 GMT 2019

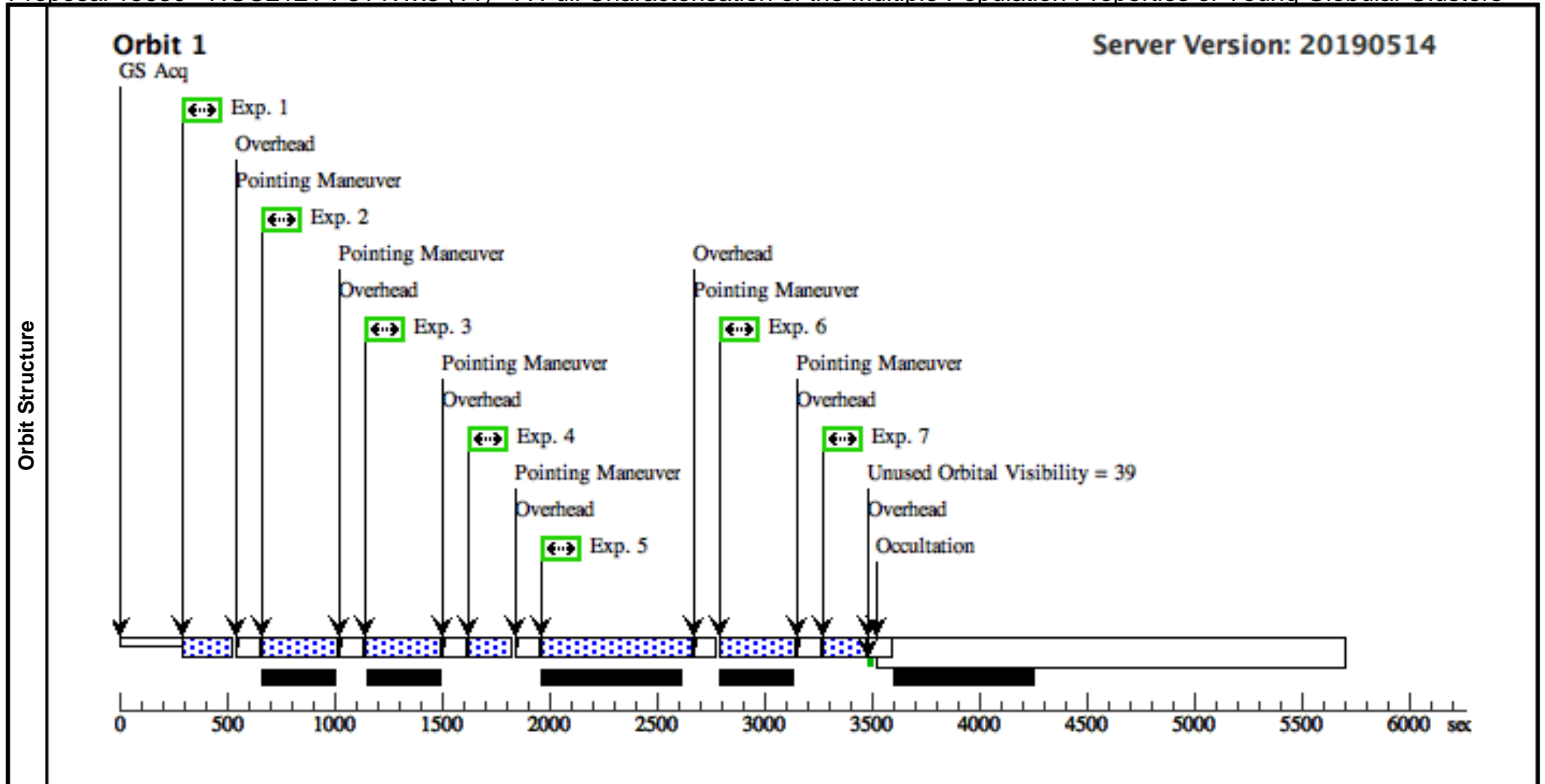
Visit	Proposal 15630, NGC2121-F275Wx3 (10), scheduling Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: ORIENT 195D TO 205 D									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(5)	NGC2121	RA: 05 48 13.1900 (87.0549583d) Dec: -71 28 52.00 (-71.48111d) Equinox: J2000		V=12.37	Reference Frame: SIMBAD				
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=STELLAR CLUSTER Description=[GLOBULAR CLUSTER, OPEN CLUSTER] Extended=NO									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F275W-150 0	(5) NGC2121	WFC3/UVIS, ACCUM, UVIS	F275W	FLASH=10	POS TARG 0.19,0.1 44		1523 Secs (1523 Secs) [==>]	[1]
	2	F275W-150 0	(5) NGC2121	WFC3/UVIS, ACCUM, UVIS	F275W	FLASH=10	POS TARG -0.092,- 0.098		1511 Secs (1511 Secs) [==>]	[1]
	3	F275W-150 0	(5) NGC2121	WFC3/UVIS, ACCUM, UVIS	F275W	FLASH=10	POS TARG -0.063,0 .052		1529 Secs (1529 Secs) [==>]	[2]
	4	F275W-150 0	(5) NGC2121	WFC3/UVIS, ACCUM, UVIS	F275W	FLASH=10	POS TARG -0.098,- 0.046		1523 Secs (1523 Secs) [==>]	[2]
	5	NGC2121-2 x1500	(5) NGC2121	WFC3/UVIS, ACCUM, UVIS	F275W	FLASH=10	POS TARG -0.092,- 0.0988		1529 Secs (1529 Secs) [==>]	[3]
	6	NGC2121-2 x1500	(5) NGC2121	WFC3/UVIS, ACCUM, UVIS	F275W	FLASH=10	POS TARG -0.19,0. 144		1523 Secs (1523 Secs) [==>]	[3]





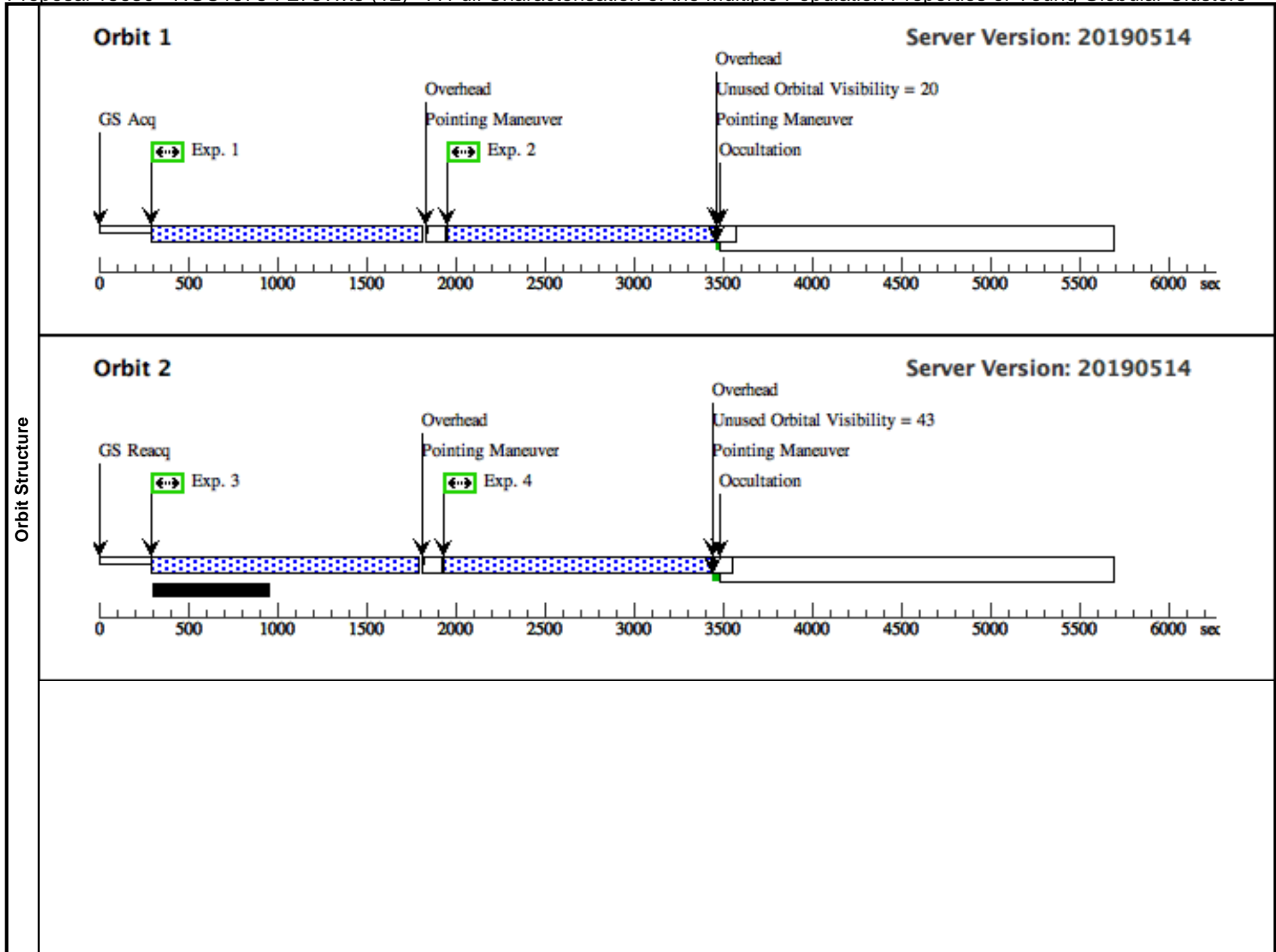
Proposal 15630 - NGC2121-F814Wx6 (11) - A Full Characterisation of the Multiple Population Properties of Young Globular Clusters

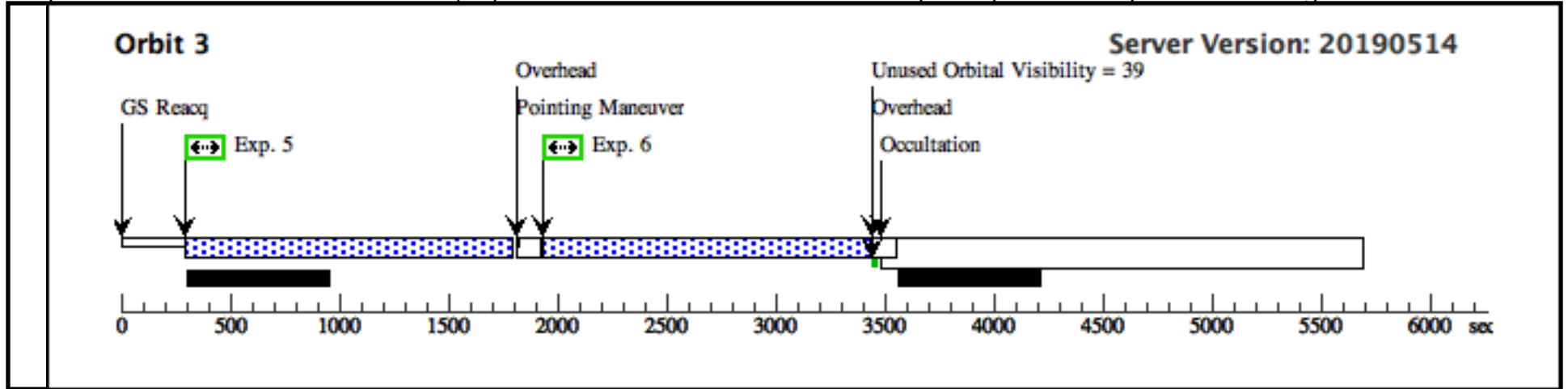
Visit	Proposal 15630, NGC2121-F814Wx6 (11), completed Thu Jun 27 16:00:43 GMT 2019 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: ORIENT 195D TO 205 D																																																																																
	Fixed Targets	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(5)</td> <td>NGC2121</td> <td>RA: 05 48 13.1900 (87.0549583d) Dec: -71 28 52.00 (-71.48111d) Equinox: J2000</td> <td></td> <td>V=12.37</td> <td>Reference Frame: SIMBAD</td> </tr> <tr> <td colspan="6"> <i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=STELLAR CLUSTER Description=[GLOBULAR CLUSTER, OPEN CLUSTER] Extended=NO </td> </tr> </tbody> </table>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(5)	NGC2121	RA: 05 48 13.1900 (87.0549583d) Dec: -71 28 52.00 (-71.48111d) Equinox: J2000		V=12.37	Reference Frame: SIMBAD	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=STELLAR CLUSTER Description=[GLOBULAR CLUSTER, OPEN CLUSTER] Extended=NO																																																																		
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Exposures	<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>NGC2121-F 814W-200</td> <td>(5) NGC2121</td> <td>WFC3/UVIS, ACCUM, UVIS</td> <td>F814W</td> <td>FLASH=8</td> <td>POS TARG -0.1,-0.0 6</td> <td></td> <td>200 Secs (200 Secs) [==>]</td> <td>[1]</td> </tr> <tr> <td>2</td> <td>NGC2121-F 814W-350</td> <td>(5) NGC2121</td> <td>WFC3/UVIS, ACCUM, UVIS</td> <td>F814W</td> <td>FLASH=6</td> <td>POS TARG 1.62,2.9 2</td> <td></td> <td>350 Secs (350 Secs) [==>]</td> <td>[1]</td> </tr> <tr> <td>3</td> <td>NGC2121-F 814W-350</td> <td>(5) NGC2121</td> <td>WFC3/UVIS, ACCUM, UVIS</td> <td>F814W</td> <td>FLASH=6</td> <td>POS TARG 1.46,2.8 6</td> <td></td> <td>350 Secs (350 Secs) [==>]</td> <td>[1]</td> </tr> <tr> <td>4</td> <td>NGC2121-F 814W-200</td> <td>(5) NGC2121</td> <td>WFC3/UVIS, ACCUM, UVIS</td> <td>F814W</td> <td>FLASH=8</td> <td>POS TARG -1.46,-2. 86</td> <td></td> <td>200 Secs (200 Secs) [==>]</td> <td>[1]</td> </tr> <tr> <td>5</td> <td>NGC2121-F 814W-700</td> <td>(5) NGC2121</td> <td>WFC3/UVIS, ACCUM, UVIS</td> <td>F814W</td> <td></td> <td>POS TARG 0,0</td> <td></td> <td>700 Secs (700 Secs) [==>]</td> <td>[1]</td> </tr> <tr> <td>6</td> <td>NGC2121-F 814W-350</td> <td>(5) NGC2121</td> <td>WFC3/UVIS, ACCUM, UVIS</td> <td>F814W</td> <td>FLASH=6</td> <td>POS TARG 0.1,-0.1 6</td> <td></td> <td>350 Secs (350 Secs) [==>]</td> <td>[1]</td> </tr> <tr> <td>7</td> <td>NGC2121-F 814W-200</td> <td>(5) NGC2121</td> <td>WFC3/UVIS, ACCUM, UVIS</td> <td>F814W</td> <td>FLASH=8</td> <td>POS TARG -1.62,-2. 92</td> <td></td> <td>200 Secs (200 Secs) [==>]</td> <td>[1]</td> </tr> </tbody> </table>	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	1	NGC2121-F 814W-200	(5) NGC2121	WFC3/UVIS, ACCUM, UVIS	F814W	FLASH=8	POS TARG -0.1,-0.0 6		200 Secs (200 Secs) [==>]	[1]	2	NGC2121-F 814W-350	(5) NGC2121	WFC3/UVIS, ACCUM, UVIS	F814W	FLASH=6	POS TARG 1.62,2.9 2		350 Secs (350 Secs) [==>]	[1]	3	NGC2121-F 814W-350	(5) NGC2121	WFC3/UVIS, ACCUM, UVIS	F814W	FLASH=6	POS TARG 1.46,2.8 6		350 Secs (350 Secs) [==>]	[1]	4	NGC2121-F 814W-200	(5) NGC2121	WFC3/UVIS, ACCUM, UVIS	F814W	FLASH=8	POS TARG -1.46,-2. 86		200 Secs (200 Secs) [==>]	[1]	5	NGC2121-F 814W-700	(5) NGC2121	WFC3/UVIS, ACCUM, UVIS	F814W		POS TARG 0,0		700 Secs (700 Secs) [==>]	[1]	6	NGC2121-F 814W-350	(5) NGC2121	WFC3/UVIS, ACCUM, UVIS	F814W	FLASH=6	POS TARG 0.1,-0.1 6		350 Secs (350 Secs) [==>]	[1]	7	NGC2121-F 814W-200	(5) NGC2121	WFC3/UVIS, ACCUM, UVIS	F814W	FLASH=8	POS TARG -1.62,-2. 92		200 Secs (200 Secs) [==>]	[1]
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit																																																																								
1	NGC2121-F 814W-200	(5) NGC2121	WFC3/UVIS, ACCUM, UVIS	F814W	FLASH=8	POS TARG -0.1,-0.0 6		200 Secs (200 Secs) [==>]	[1]																																																																								
2	NGC2121-F 814W-350	(5) NGC2121	WFC3/UVIS, ACCUM, UVIS	F814W	FLASH=6	POS TARG 1.62,2.9 2		350 Secs (350 Secs) [==>]	[1]																																																																								
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5	NGC2121-F 814W-700	(5) NGC2121	WFC3/UVIS, ACCUM, UVIS	F814W		POS TARG 0,0		700 Secs (700 Secs) [==>]	[1]																																																																								
6	NGC2121-F 814W-350	(5) NGC2121	WFC3/UVIS, ACCUM, UVIS	F814W	FLASH=6	POS TARG 0.1,-0.1 6		350 Secs (350 Secs) [==>]	[1]																																																																								
7	NGC2121-F 814W-200	(5) NGC2121	WFC3/UVIS, ACCUM, UVIS	F814W	FLASH=8	POS TARG -1.62,-2. 92		200 Secs (200 Secs) [==>]	[1]																																																																								



Proposal 15630 - NGC1978-F275Wx3 (12) - A Full Characterisation of the Multiple Population Properties of Young Globular Clusters

Visit	Proposal 15630, NGC1978-F275Wx3 (12), implementation Thu Jun 27 16:00:43 GMT 2019 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: ORIENT 260D TO 270 D									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(1)	NGC1978	RA: 05 28 48.9091 (82.2037879d) Dec: -66 14 17.79 (-66.23827d) Equinox: J2000		V=10.7	Reference Frame: SIMBAD				
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=STELLAR CLUSTER Description=[GLOBULAR CLUSTER, OPEN CLUSTER] Extended=NO									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F275W-2x1 500	(1) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F275W	FLASH=10	POS TARG 0,0		1493 Secs (1493 Secs)	
									[==>]	[1]
	2	F275W-2x1 500	(1) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F275W	FLASH=10	POS TARG -0.092,- 0.098		1498 Secs (1498 Secs)	
									[==>]	[1]
	3	F275W-2x1 500	(1) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F275W	FLASH=10	POS TARG 0.0063,- 0.052		1500 Secs (1500 Secs)	
									[==>]	[2]
4	F275W-2x1 500	(1) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F275W	FLASH=10	POS TARG 0.098,0. 046		1499 Secs (1499 Secs)		
								[==>]	[2]	
5	F275W-2x1 500	(1) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F275W	FLASH=10	POS TARG 0.092,0. 098		1501 Secs (1501 Secs)		
								[==>]	[3]	
6	F275W-2x1 500	(1) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F275W	FLASH=10	POS TARG 0.19,0.1 4		1502 Secs (1502 Secs)		
								[==>]	[3]	

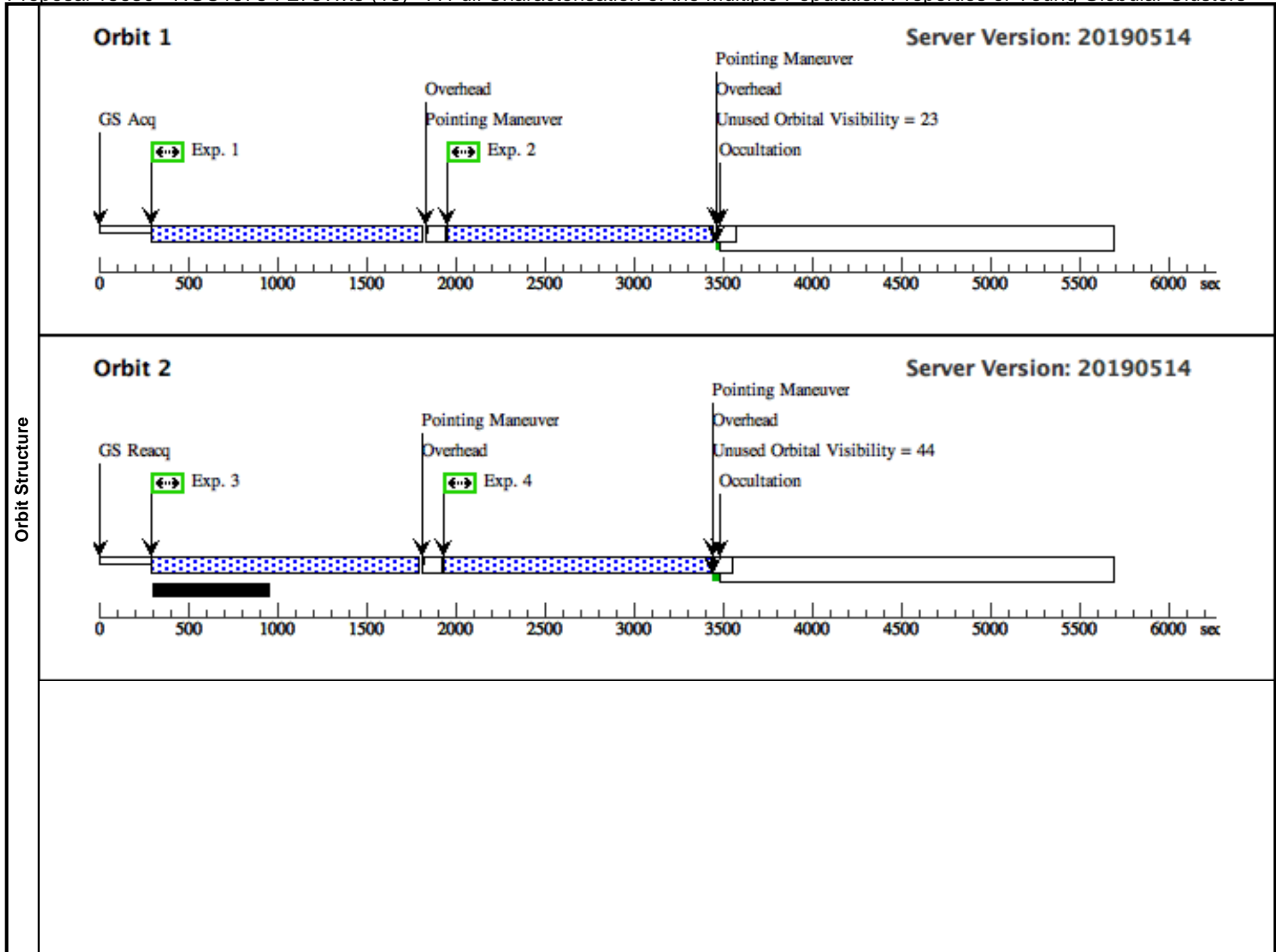


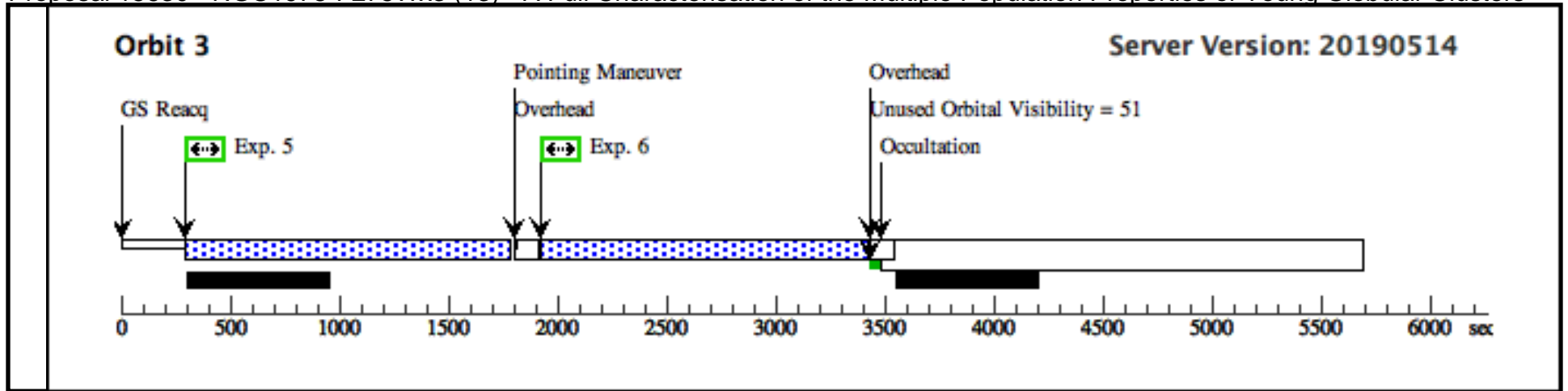


Proposal 15630 - NGC1978-F275Wx3 (13) - A Full Characterisation of the Multiple Population Properties of Young Globular Clusters

Thu Jun 27 16:00:43 GMT 2019

Visit	Proposal 15630, NGC1978-F275Wx3 (13), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: ORIENT 260D TO 270 D									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(1)	NGC1978	RA: 05 28 48.9091 (82.2037879d) Dec: -66 14 17.79 (-66.23827d) Equinox: J2000		V=10.7	Reference Frame: SIMBAD				
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=STELLAR CLUSTER Description=[GLOBULAR CLUSTER, OPEN CLUSTER] Extended=NO									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F275W-2x1 500	(1) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F275W	FLASH=10	POS TARG -0.092,- 0.098		1493 Secs (1493 Secs)	
									[==>]	[1]
	2	F275W-2x1 500	(1) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F275W	FLASH=10	POS TARG 0,0		1495 Secs (1495 Secs)	
									[==>]	[1]
	3	F275W-2x1 500	(1) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F275W	FLASH=10	POS TARG -0.006,0 .052		1500 Secs (1500 Secs)	
									[==>]	[2]
4	F275W-2x1 500	(1) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F275W	FLASH=10	POS TARG -0.098,- 0.046		1498 Secs (1498 Secs)		
								[==>]	[2]	
5	F275W-2x1 500	(1) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F275W	FLASH=10	POS TARG -0.092,- 0.098		1492 Secs (1492 Secs)		
								[==>]	[3]	
6	F275W-2x1 500	(1) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F275W	FLASH=10	POS TARG -1.62,-2. 92		1499 Secs (1499 Secs)		
								[==>]	[3]	





Proposal 15630 - NGC1978-F814Wx6 (14) - A Full Characterisation of the Multiple Population Properties of Young Globular Clusters

Thu Jun 27 16:00:43 GMT 2019

Visit	Proposal 15630, NGC1978-F814Wx6 (14), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: ORIENT 260D TO 270 D									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(1)	NGC1978	RA: 05 28 48.9091 (82.2037879d) Dec: -66 14 17.79 (-66.23827d) Equinox: J2000		V=10.7	Reference Frame: SIMBAD				
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=STELLAR CLUSTER Description=[GLOBULAR CLUSTER, OPEN CLUSTER] Extended=NO									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F814W-200	(1) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	FLASH=8	POS TARG -0.1,-0.0 6		200 Secs (200 Secs) [==>]	[1]
	2	F814W-349	(1) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	FLASH=6	POS TARG 1.62,2.9 2		349 Secs (349 Secs) [==>]	[1]
	3	F814W-349	(1) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	FLASH=6	POS TARG -1.62,-2.92		349 Secs (349 Secs) [==>]	[1]
	4	F814W-200	(1) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	FLASH=8	POS TARG -0.1,-0.0 6		200 Secs (200 Secs) [==>]	[1]
	5	F814W-700	(1) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W		POS TARG 0,0		688 Secs (688 Secs) [==>]	[1]
	6	F814W-350	(1) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	FLASH=6	POS TARG -1.46,-2.86		348 Secs (348 Secs) [==>]	[1]
	7	F814W-200	(1) NGC1978	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	FLASH=8	POS TARG 0.10,0.1 6		200 Secs (200 Secs) [==>]	[1]

