



14658 - Massive Star Clusters and the Origin of Ultra-Diffuse Galaxies

Cycle: 24, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

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VISITS

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
01	(1) DF1 (2) DF2	ACS/WFC WFC3/UVIS	1	07-Sep-2016 17:50:29.0	yes
02	(3) DF3	ACS/WFC	1	07-Sep-2016 17:50:30.0	yes
03	(4) DF4	ACS/WFC	1	07-Sep-2016 17:50:31.0	yes
04	(5) DF6 (8) DF9	ACS/WFC WFC3/UVIS	1	07-Sep-2016 17:50:31.0	yes
05	(6) DF7	ACS/WFC	1	07-Sep-2016 17:50:32.0	yes
06	(7) DF8	ACS/WFC	1	07-Sep-2016 17:50:32.0	yes
07	(9) DF10	ACS/WFC	1	07-Sep-2016 17:50:33.0	yes
08	(10) DF11	ACS/WFC	1	07-Sep-2016 17:50:33.0	yes

Proposal 14658 (STScI Edit Number: 1, Created: Wednesday, September 7, 2016 4:50:44 PM EST) - Overview

<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>
09	(11) DF12	ACS/WFC	1	07-Sep-2016 17:50:34.0	yes
10	(12) DF13	ACS/WFC	1	07-Sep-2016 17:50:34.0	yes
11	(13) DF14+15	ACS/WFC	1	07-Sep-2016 17:50:35.0	yes
12	(15) DF18 (22) DF28	ACS/WFC WFC3/UVIS	1	07-Sep-2016 17:50:35.0	yes
13	(16) DF19	ACS/WFC	1	07-Sep-2016 17:50:36.0	yes
14	(17) DF20+26	ACS/WFC	1	07-Sep-2016 17:50:36.0	yes
15	(18) DF22	ACS/WFC	1	07-Sep-2016 17:50:37.0	yes
16	(19) DF23 (20) DF25	ACS/WFC WFC3/UVIS	1	07-Sep-2016 17:50:38.0	yes
17	(23) DF29	ACS/WFC	1	07-Sep-2016 17:50:38.0	yes
18	(24) DF30	ACS/WFC	1	07-Sep-2016 17:50:39.0	yes
19	(25) DF31	ACS/WFC	1	07-Sep-2016 17:50:39.0	yes
20	(26) DF32 (27) DF34	ACS/WFC WFC3/UVIS	1	07-Sep-2016 17:50:40.0	yes
21	(28) DF35	ACS/WFC	1	07-Sep-2016 17:50:40.0	yes
22	(29) DF36	ACS/WFC	1	07-Sep-2016 17:50:41.0	yes
23	(30) DF39 (31) DF40	ACS/WFC WFC3/UVIS	1	07-Sep-2016 17:50:41.0	yes
24	(32) DF41	ACS/WFC	1	07-Sep-2016 17:50:42.0	yes
26	(35) DF46	ACS/WFC	1	07-Sep-2016 17:50:42.0	yes
27	(36) DF47	ACS/WFC	1	07-Sep-2016 17:50:43.0	yes

26 Total Orbits Used

ABSTRACT

Observations of nearby galaxy clusters at low surface brightness have identified galaxies with low luminosities, but sizes as large as the Milky Way. These so-called "ultra-diffuse galaxies" (UDGs) manage to survive in dense environments like the Coma cluster despite having very low stellar mass densities, suggesting that they may be extremely dark matter-dominated. While some have suggested that they are "failed L^* galaxies", others contend that UDGs are consistent with the high spin tail of the dwarf galaxy halo angular momentum distribution. The recent discovery of globular clusters (GCs) in three UDGs has shed light on the nature of UDGs, but also raised new questions. Total mass estimates inferred from GC numbers and kinematics show that these galaxies have very high mass-to-light ratios ($M/L > 1000$), and point to very inefficient star formation. The existence of GCs, however, requires that these galaxies must have at one point had an intense and efficient starburst. This conundrum is amplified by the presence of a nuclear star cluster in two UDGs, but not in others. Further investigating the stellar populations of UDGs, e.g., through integrated spectroscopy, is challenging due to their low surface brightness. Observing their star cluster populations with HST, however, is comparatively easy, and provides key information on the total masses and star formation histories of these newly identified class of galaxy. We propose to use ACS/WFC and WFC3/UVIS to survey 36 Coma cluster UDGs for globular and nuclear star clusters. Our program will be the first systematic search for star clusters in a large sample of ultra-diffuse galaxies.

OBSERVING DESCRIPTION

Observational and Technical Requirements. The primary goals of our observing program are to obtain the total number of globular clusters and identify any stellar nuclei across a sample of ultra-diffuse galaxies in the Coma cluster. Our experience from Peng et al. (2011) and Peng & Lim (2016) shows that the single most important factor in being able to discriminate contaminants from bona fide GCs at the distance of the Coma cluster is HST's high spatial resolution and depth. Most background galaxies with the same apparent magnitudes as Coma GCs are point sources from the ground, making them indistinguishable from GCs. HST's spatial resolution, however, eliminates most of this contamination, as GCs are still unresolved point sources, whereas most background galaxies at this depth are resolved by HST. To achieve our goal of measuring the total number of GCs in each UDG, we need to reach the turnover (mean) of the globular cluster luminosity function (GCLF), whose form is roughly a Gaussian distribution. We assume a mean distance to Coma, because unlike for DF17, which had two orbits of exposure time in each of three filters, the depth of our proposed observations will be insufficient to determine the distances to each UDG using the GCLF itself. Even for high-SN galaxies, we expect a relatively small number of GCs in each UDGs, so the uncertainty of total number of GCs may be large for some galaxies (~50%), but by targeting dozens of UDGs, we will be able to reduce the uncertainty in the GC specific frequency for this class of galaxy as a whole.

Survey Design. van Dokkum et al. (2015a) provide a catalog of 47 UDGs with $R_e > 1.5$ kpc in the Coma cluster. The lower size limit of their sample was determined by resolution of their Dragonfly camera images. UDGs with $1.5 < R_e < 2$ kpc, however, are not significantly larger than normal dwarf galaxies (see Figure 3 in Mihos et al. 2015). Therefore, we focus on the largest UDGs, selecting all 36 galaxies with $R_e > 2$ kpc (not including

DF17).

We will use ACS/WFC with the F606W filter because of its high sensitivity. Although an extra filter would provide color information, we find that most of the power in GC selection can be had with a single filter. There are seven galaxies for which we can use WFC3/UVIS in parallel to observe another UDG in our sample. WFC3/UVIS with F606W is also a good option, as its slightly better spatial sampling of the PSF can help with reducing contamination from background galaxies, although it is less sensitive than ACS/WFC. For this reason, we choose to use ACS/WFC as our primary instrument, and WFC3/UVIS in parallel when there is an appropriate target.

Exposure Times and Observing Strategy. The GCLF of a low-mass early-type galaxy has a peak magnitude at $M_V = -7.3$ (Miller & Lotz 2007).

Using the color of a typical GC and the transformations from DeGraaff et al. (2007), $V - V_{606} = 0.13$. A mean GC at the distance of the Coma cluster ($m - M = 35$), including a foreground extinction of $A_V = 0.02$ (Schlafly & Finkbeiner 2011), puts the GCLF mean at $V_{606} = 27.6$. Given the visibility of Coma (54 min) and overhead constraints for ACS/WFC and WFC3/UVIS with a 2-point artifact dither pattern, we will have 2490s of exposure time with ACS/WFC, and 2538s with WFC3/UVIS. These exposure times allow us to reach the GCLF turnover (using a G0V spectral template and average backgrounds) with an optimal $S/N = 11.1$ for ACS and 9.8 for UVIS. Given that our main goal is GC detection, these S/N are well-matched to our study.

To test the feasibility of our single orbit strategy, we use the archival ACS/WFC F606W images of DF17 which were analyzed in Peng & Lim (2016). We drizzled only 2360 seconds of exposure time in the F606W filter to simulate the observations we would get with our proposed program. When we re-did our analysis with this shallower, single-band data, and compared the results to our deeper, multi-band selection, we obtained results that were consistent within the uncertainties. For the multi-band analysis, we estimated the total number of GCs to be 28 ± 11 (not including distance uncertainties), and for the shallower, single-band image, we obtained 30 ± 13 . This test validates our strategy of obtaining a single orbit in F606W for each galaxy.

Our sample contains 36 Coma UDGs. Two pairs of targets, however, are close enough on the sky to be observed in a single ACS/WFC pointing. Another seven targets can be observed with WFC3/UVIS in parallel with ACS. Because these galaxies are small compared to the WFC and UVIS fields of view, we will not fill the CCD gap, and will center the target on one of the CCDs. Our total request is 27 primary orbits, and 7 parallel orbits.

The Need for HST. This is a program that can only be done with HST, because the primary requirement is high spatial resolution. The PSF size at the distance of the Coma cluster is 48 pc, which means that sources smaller than 10 pc are unresolved. So, while GCs are point sources, most of the contaminating background is resolved with HST and can be rejected. At these depths foreground star contamination is not an issue because Galactic dwarf stars would need to be hundreds of kpc away. While some studies can (and will) be done from the ground in more nearby clusters, like Virgo and Fornax, the number of UDGs appears to scale with the mass of the host cluster, and Coma provides nearly an order of magnitude more targets than we might find in the less massive nearby clusters. More massive clusters in which some studies have been performed (e.g, van der Burg 2016;

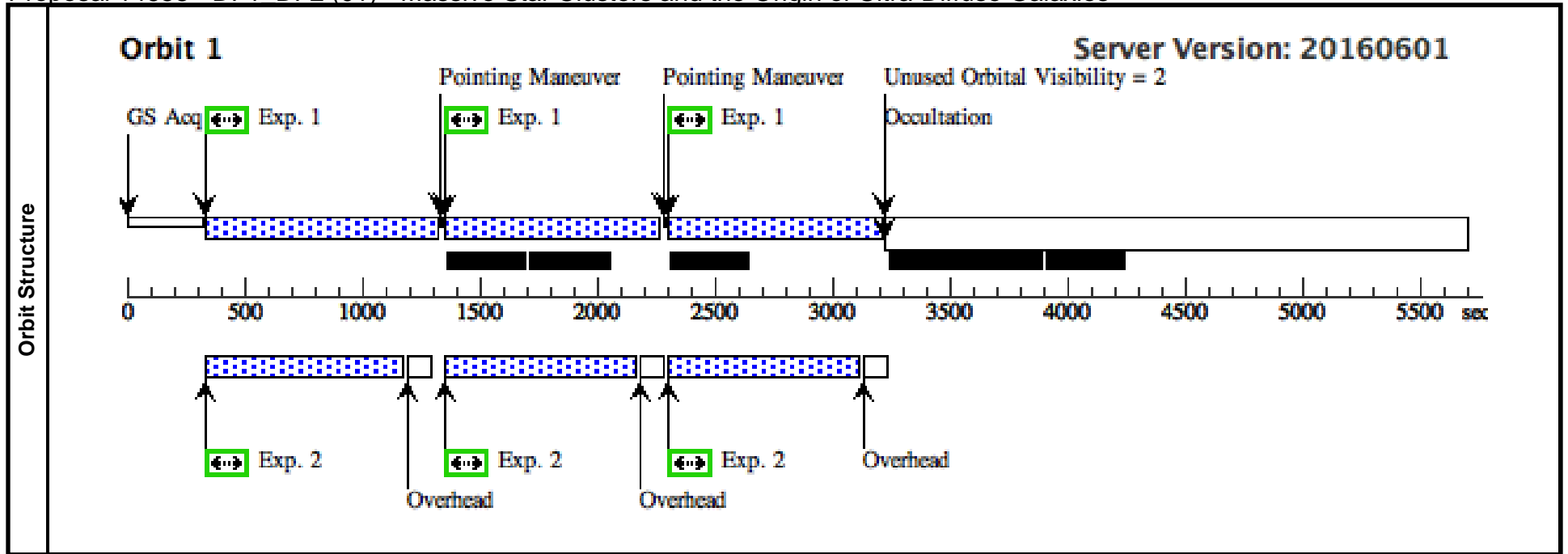
Roman & Trujillo 2016) are too distant for star cluster studies with HST. Observations of the Coma cluster with HST are the sweet spot for star cluster studies in UDGs.

Team Expertise and Management Plan. Our team has expertise in all observational and theoretical aspects of this program. Members of our team executed the ACS Virgo and Fornax Cluster Surveys (Cote, Peng, Blakeslee), the definitive HST/ACS surveys of extra-galactic GC systems and nuclear star clusters in the cluster environment. We have also have deep experience working with HST observations of GCs in Coma cluster galaxies (Peng, Blakeslee), the dynamics and masses of low-mass galaxies (Guhathakurta, Peng), HST observations of nearby star cluster systems (Lim), and studies of GC formation in cosmological hydrodynamic simulations (Sales). Peng (the PI) will oversee the project, with Lim and Peng leading the reduction and analysis of the HST imaging, Sales leading the interpretation of the results through use of the Illustris simulation, and Cote, Blakeslee, and Guhathakurta assisting in the scientific interpretation and ground-based follow-up observations.

Proposal 14658 - DF1 DF2 (01) - Massive Star Clusters and the Origin of Ultra-Diffuse Galaxies

Wed Sep 07 21:50:44 GMT 2016

Visit	Proposal 14658, DF1_DF2 (01), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: ORIENT 145D TO 160 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
	(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.3 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=42 Angle Between Sides= Center Pattern=false		(1-2)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	DF1	RA: 12 59 14.1000 (194.8087500d) Dec: +29 07 16.00 (29.12111d) Equinox: J2000		V=20	Reference Frame: ICRS				
	(2)	DF2	RA: 12 59 9.5000 (194.7895833d) Dec: +29 00 25.00 (29.00694d) Equinox: J2000		V=19.5	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(1) DF1	ACS/WFC, ACCUM, WFC2	F606W		POS TARG -19.571 206149063734,13.75 486647673226	Pattern 1, Exps 1-2 in DF1_DF2 (01) (1) Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in DF1_DF2 (01)	786 Secs (2358 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[1]
	2		(2) DF2	WFC3/UVIS, ACCUM, UVIS1	F606W			Pattern 1, Exps 1-2 in DF1_DF2 (01) (1) Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in DF1_DF2 (01)	750 Secs (2445 Secs) [==>815.0 Secs (Pattern 1)] [==>815.0 Secs (Pattern 2)] [==>815.0 Secs (Pattern 3)]	[1]

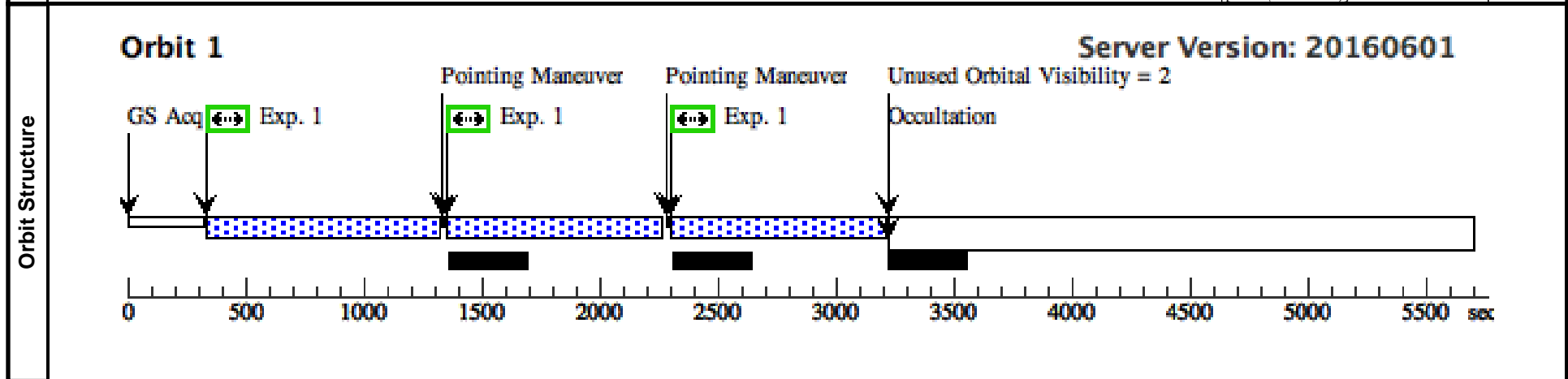


Visit	Proposal 14658, DF3 (02), implementation		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: ACS/WFC		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.3 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=42 Angle Between Sides= Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(3)	DF3		RA: 13 02 16.5000 (195.5687500d) Dec: +28 57 17.00 (28.95472d) Equinox: J2000		V=19.5

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(3) DF3		ACS/WFC, ACCUM, WFC1	F606W			Pattern 1, Exps 1-1 in DF3 (02) (1)	786 Secs (2358 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]

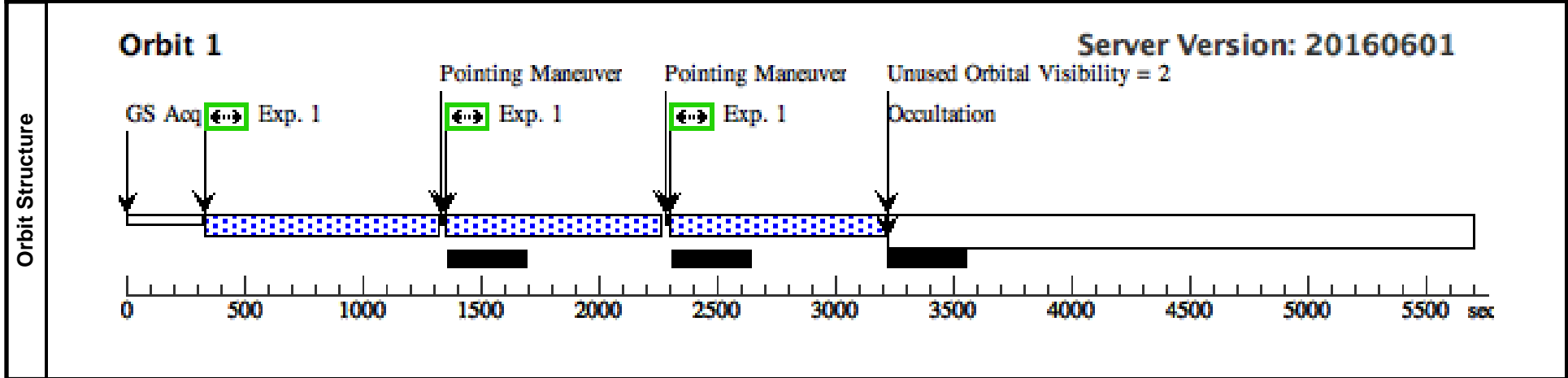


Visit	Proposal 14658, DF4 (03), implementation		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: ACS/WFC		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.3 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=42 Angle Between Sides= Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(4)	DF4	RA: 13 02 33.4000 (195.6391667d) Dec: +28 34 51.00 (28.58083d) Equinox: J2000		V=19.5	Reference Frame: ICRS

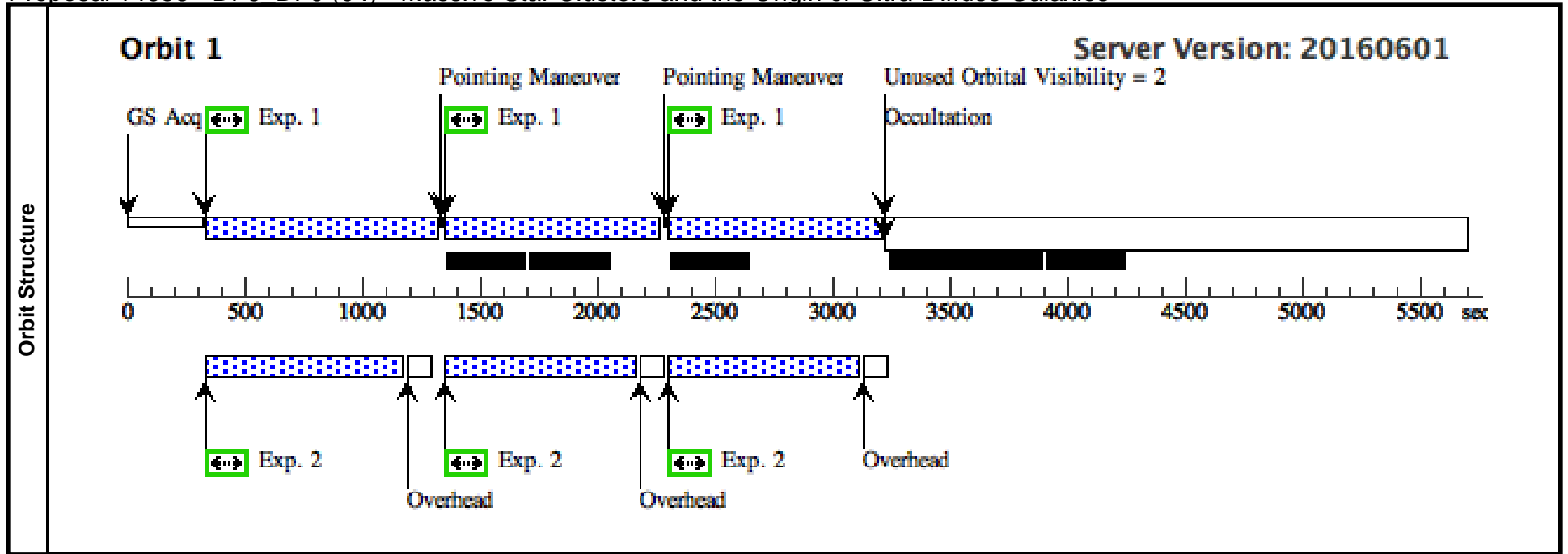
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(4) DF4	ACS/WFC, ACCUM, WFC1	F606W				Pattern 1, Exps 1-1 in DF4 (03) (1)	786 Secs (2358 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]



Proposal 14658 - DF6 DF9 (04) - Massive Star Clusters and the Origin of Ultra-Diffuse Galaxies

Wed Sep 07 21:50:44 GMT 2016

Visit	Proposal 14658, DF6_DF9 (04), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: ORIENT 151D TO 153 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
		(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.3 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=42 Angle Between Sides= Center Pattern=false		(1-2)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(5)	DF6	RA: 12 56 29.7000 (194.1237500d) Dec: +28 26 40.00 (28.44444d) Equinox: J2000		V=19.5	Reference Frame: ICRS				
	(8)	DF9	RA: 12 56 22.8000 (194.0950000d) Dec: +28 19 53.00 (28.33139d) Equinox: J2000		V=18.5	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(5) DF6	ACS/WFC, ACCUM, WFC2	F606W			Pattern 1, Exps 1-2 in DF6_DF9 (04) (1) Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in DF6_DF9 (04)	786 Secs (2358 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[1]
	2		(8) DF9	WFC3/UVIS, ACCUM, UVIS1	F606W			Pattern 1, Exps 1-2 in DF6_DF9 (04) (1) Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in DF6_DF9 (04)	750 Secs (2445 Secs) [==>815.0 Secs (Pattern 1)] [==>815.0 Secs (Pattern 2)] [==>815.0 Secs (Pattern 3)]	[1]

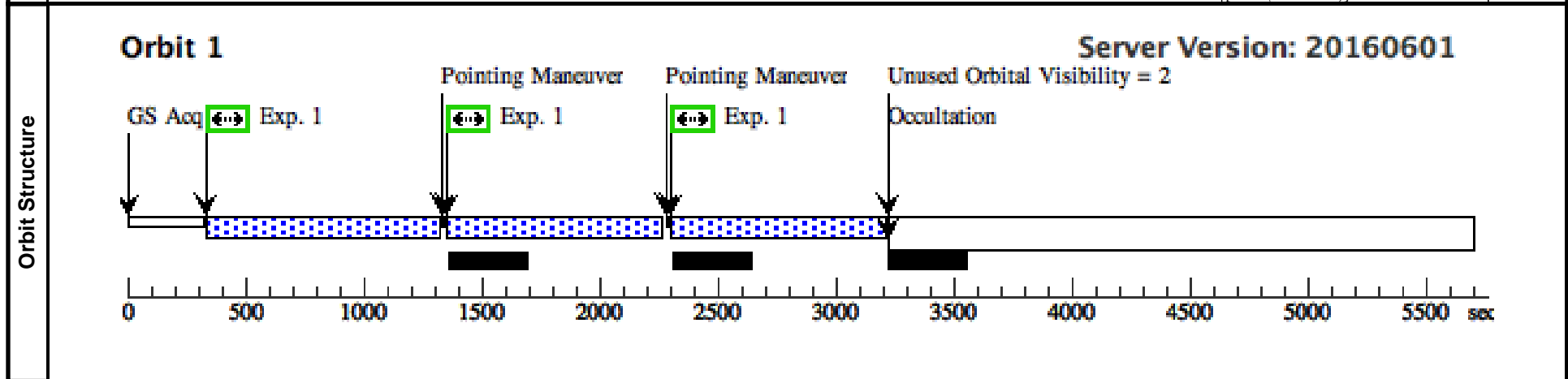


Visit	Proposal 14658, DF7 (05), implementation		
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	Scientific Instruments: ACS/WFC		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.3 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=42 Angle Between Sides= Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(6)	DF7	RA: 12 57 1.7000 (194.2570833d) Dec: +28 23 25.00 (28.39028d) Equinox: J2000		V=18.5	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(6) DF7	ACS/WFC, ACCUM, WFC1	F606W				Pattern 1, Exps 1-1 in DF7 (05) (1)	786 Secs (2358 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]

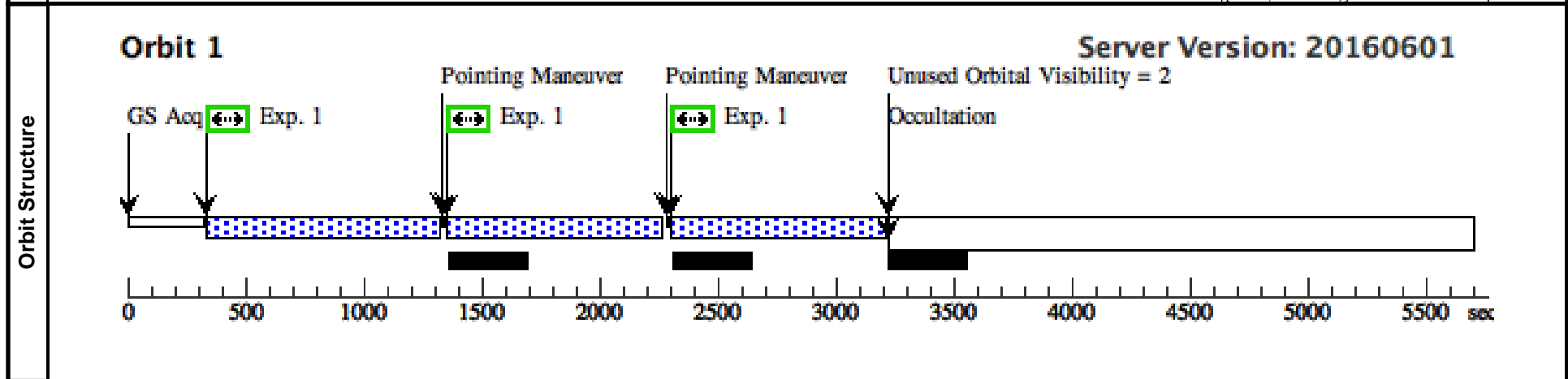


Visit	Proposal 14658, DF8 (06), implementation			
	Diagnostic Status: No Diagnostics			
	Scientific Instruments: ACS/WFC			
	Special Requirements: (none)			

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
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Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(7)	DF8	RA: 13 01 30.4000 (195.3766667d) Dec: +28 22 28.00 (28.37444d) Equinox: J2000			V=20

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(7) DF8	ACS/WFC, ACCUM, WFC1	F606W			POS TARG -10,0	Pattern 1, Exps 1-1 in DF8 (06) (1)	786 Secs (2358 Secs)
									[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]

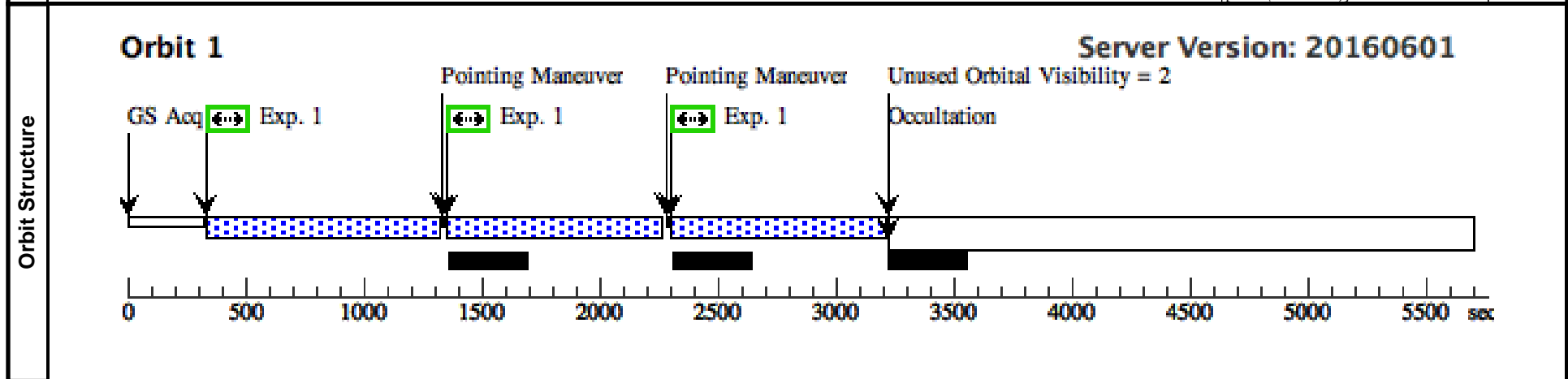


Visit	Proposal 14658, DF10 (07), implementation		
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	Scientific Instruments: ACS/WFC		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
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Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(9)	DF10	RA: 12 59 16.3000 (194.8179167d) Dec: +28 17 51.00 (28.29750d) Equinox: J2000		V=20	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(9) DF10	ACS/WFC, ACCUM, WFC1	F606W				Pattern 1, Exps 1-1 in DF10 (07) (1)	786 Secs (2358 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]

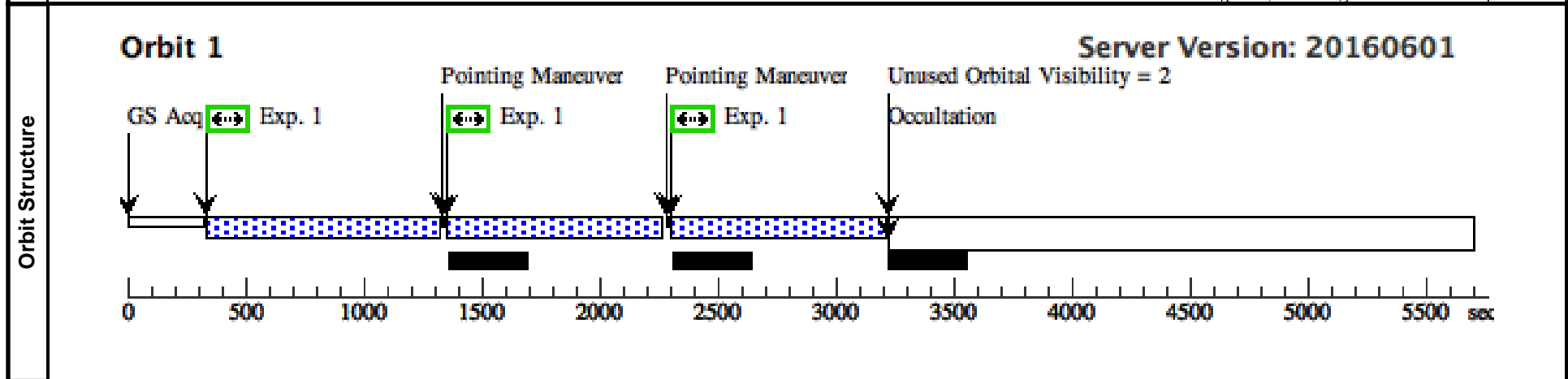


Visit	Proposal 14658, DF11 (08), implementation			
	Diagnostic Status: No Diagnostics			
	Scientific Instruments: ACS/WFC			
	Special Requirements: (none)			

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.3 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=42 Angle Between Sides= Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(10)	DF11	RA: 13 02 25.5000 (195.6062500d) Dec: +28 13 58.00 (28.23278d) Equinox: J2000		V=19.5	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(10) DF11	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 10,0	Pattern 1, Exps 1-1 in DF11 (08) (1)	786 Secs (2358 Secs)	
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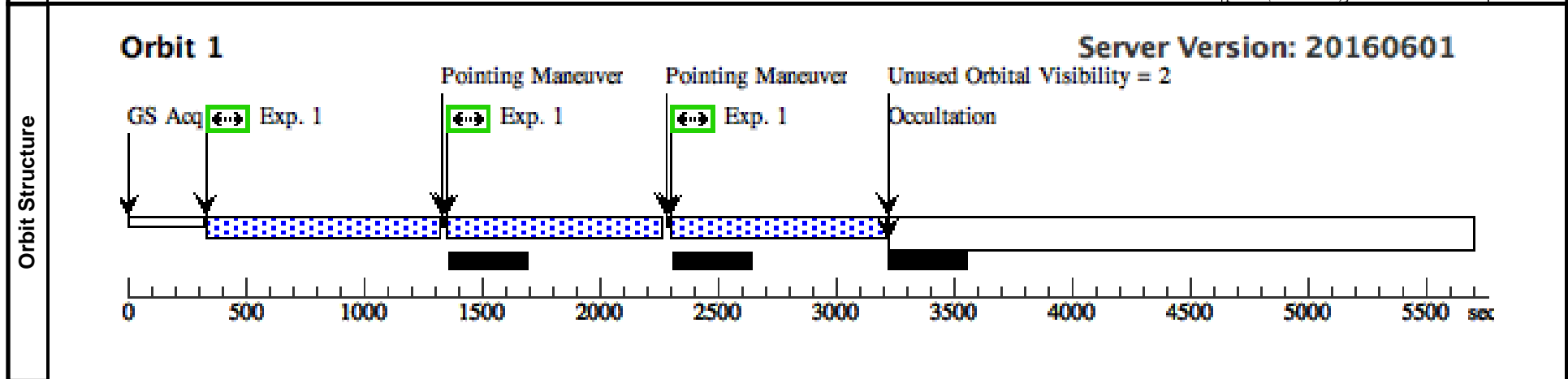


Visit	Proposal 14658, DF12 (09), implementation			
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	Scientific Instruments: ACS/WFC			
	Special Requirements: (none)			

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
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Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(11)	DF12	RA: 13 00 9.1000 (195.0379167d) Dec: +28 08 27.00 (28.14083d) Equinox: J2000		V=20.5	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(11) DF12	ACS/WFC, ACCUM, WFC1	F606W				Pattern 1, Exps 1-1 in DF12 (09) (1)	786 Secs (2358 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]

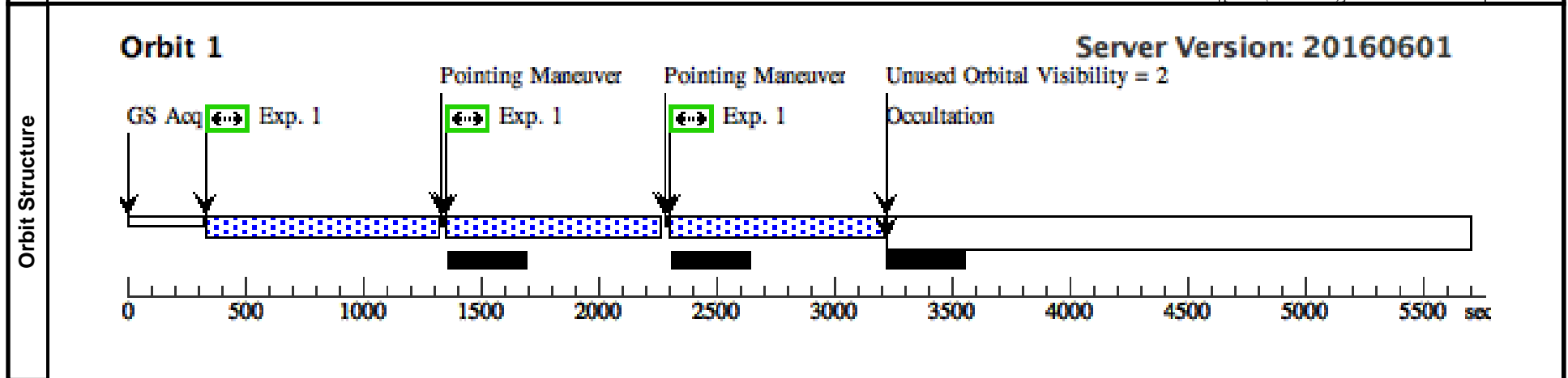


Visit	Proposal 14658, DF13 (10), implementation		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: ACS/WFC		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
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Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(12)	DF13	RA: 13 01 56.2000 (195.4841667d) Dec: +28 07 23.00 (28.12306d) Equinox: J2000		V=21.0	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(12) DF13	ACS/WFC, ACCUM, WFC1	F606W				Pattern 1, Exps 1-1 in DF13 (10) (1)	786 Secs (2358 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]



Proposal 14658 - DF14+15 (11) - Massive Star Clusters and the Origin of Ultra-Diffuse Galaxies

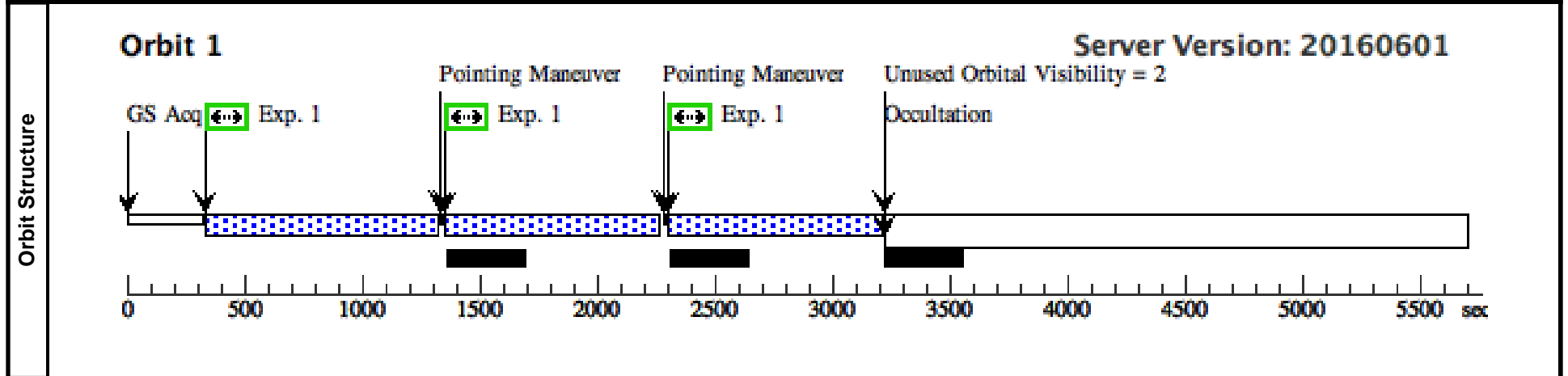
Wed Sep 07 21:50:44 GMT 2016

Visit	Proposal 14658, DF14+15 (11), implementation Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC Special Requirements: ORIENT 0D TO 10 D; ORIENT 60D TO 95 D; ORIENT 200D TO 217 D; ORIENT 260D TO 359 D		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.3 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=42 Angle Between Sides= Center Pattern=false		(1)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(13)	DF14+15	RA: 12 58 11.9120 (194.5496333d) Dec: +27 54 25.02 (27.90695d) Equinox: J2000		V=19.5	Reference Frame: ICRS

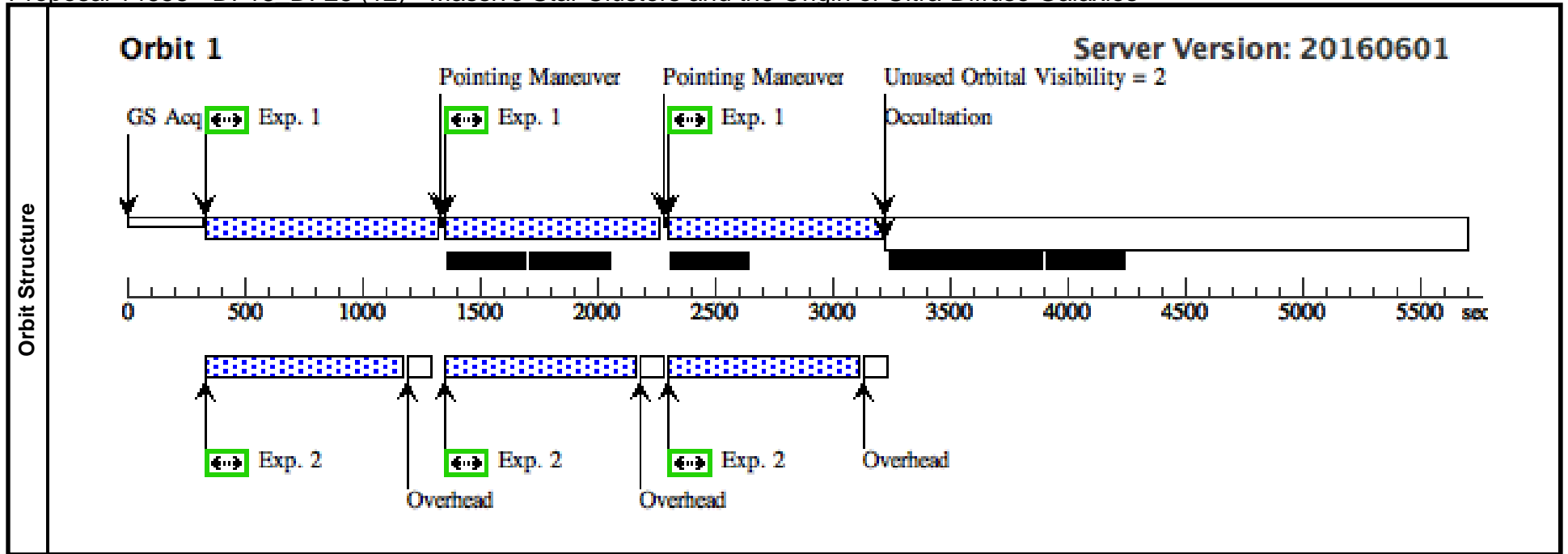
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(13) DF14+15	ACS/WFC, ACCUM, WFC	F606W		POS TARG 3.44544 5274670757,5.81295 50776568255	Pattern 1, Exps 1-1 i n DF14+15 (11) (1)	786 Secs (2358 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[1]



Proposal 14658 - DF18 DF28 (12) - Massive Star Clusters and the Origin of Ultra-Diffuse Galaxies

Wed Sep 07 21:50:44 GMT 2016

Visit	Proposal 14658, DF18_DF28 (12), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: ORIENT 85D TO 103 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
	(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.3 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=42 Angle Between Sides= Center Pattern=false		(1-2)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(15)	DF18	RA: 12 59 11.5761 (194.7982337d) Dec: +27 49 40.47 (27.82791d) Equinox: J2000		V=21.0	Reference Frame: ICRS				
	(22)	DF28	RA: 12 59 30.4000 (194.8766667d) Dec: +27 44 50.00 (27.74722d) Equinox: J2000		V=19.5	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(15) DF18	ACS/WFC, ACCUM, WFC1	F606W			Pattern 1, Exps 1-2 in DF18_DF28 (12) (1) Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in DF18_DF28 (12)	786 Secs (2358 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[1]
	2		(22) DF28	WFC3/UVIS, ACCUM, UVIS1	F606W			Pattern 1, Exps 1-2 in DF18_DF28 (12) (1) Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in DF18_DF28 (12)	750 Secs (2445 Secs) [==>815.0 Secs (Pattern 1)] [==>815.0 Secs (Pattern 2)] [==>815.0 Secs (Pattern 3)]	[1]

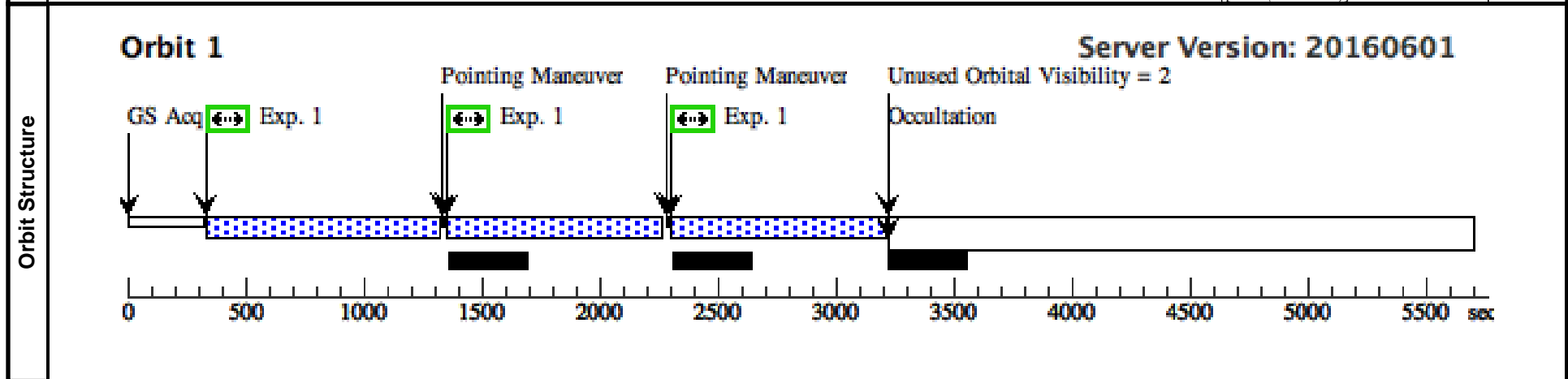


Visit	Proposal 14658, DF19 (13), implementation		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: ACS/WFC		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.3 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=42 Angle Between Sides= Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(16)	DF19	RA: 13 04 5.1000 (196.0212500d) Dec: +27 48 5.00 (27.80139d) Equinox: J2000		V=20.0	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(16) DF19	ACS/WFC, ACCUM, WFC1	F606W				Pattern 1, Exps 1-1 in DF19 (13) (1)	786 Secs (2358 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]

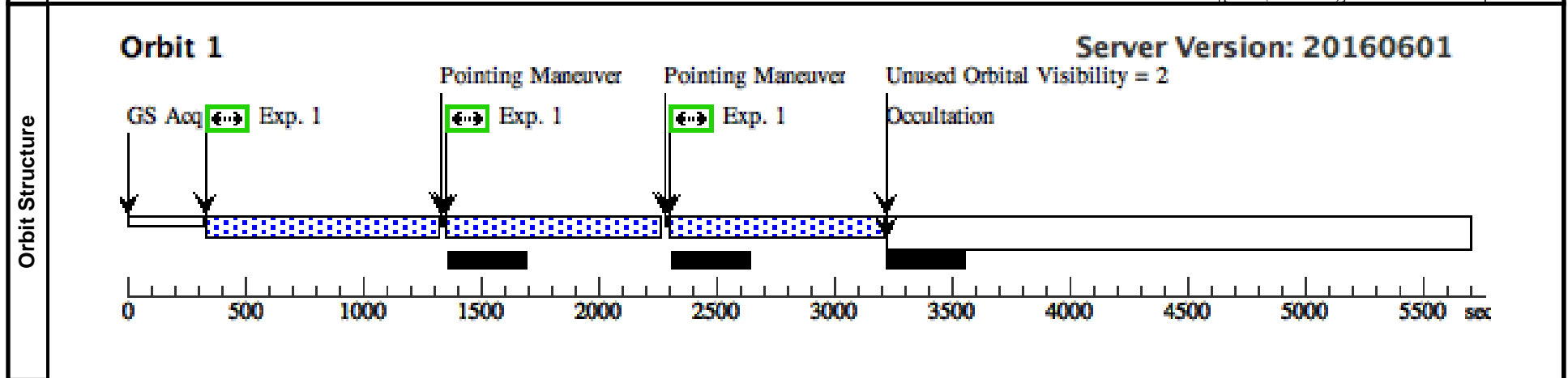


Visit	Proposal 14658, DF20+26 (14), implementation		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: ACS/WFC		
	Special Requirements: ORIENT 0D TO 35 D; ORIENT 75D TO 230 D; ORIENT 280D TO 359 D		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.3 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=42 Angle Between Sides= Center Pattern=false		(1)

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(17)	DF20+26	RA: 13 00 18.9000 (195.0787500d) Dec: +27 48 6.00 (27.80167d) Equinox: J2000		V=19.0	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(17) DF20+26	ACS/WFC, ACCUM, WFC	F606W				Pattern 1, Exps 1-1 in DF20+26 (14) (1)	786 Secs (2358 Secs)
									[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]

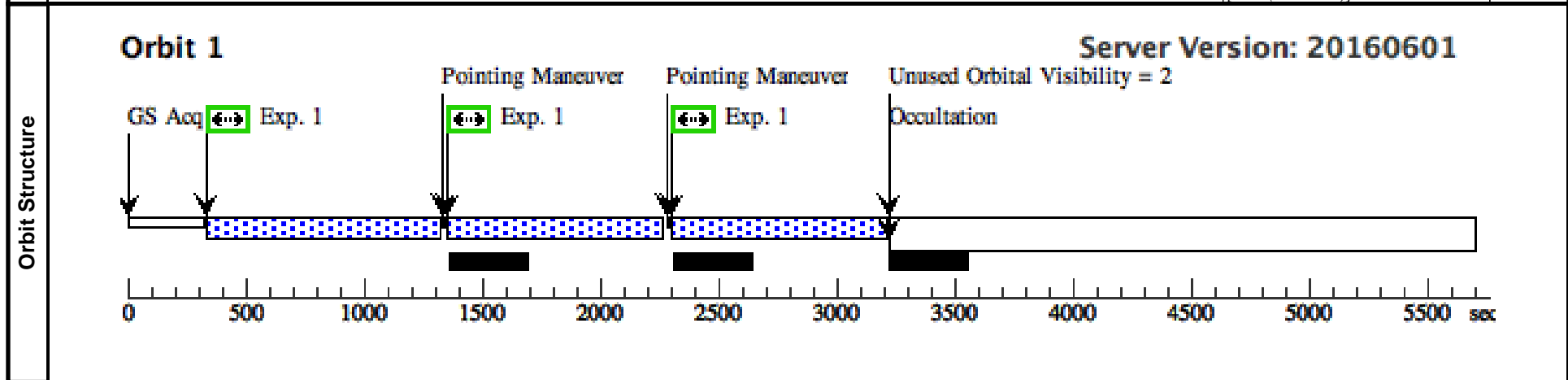


Visit	Proposal 14658, DF22 (15), implementation		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: ACS/WFC		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.3 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=42 Angle Between Sides= Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(18)	DF22	RA: 13 02 57.8000 (195.7408333d) Dec: +27 47 25.00 (27.79028d) Equinox: J2000		V=20.5	Reference Frame: ICRS

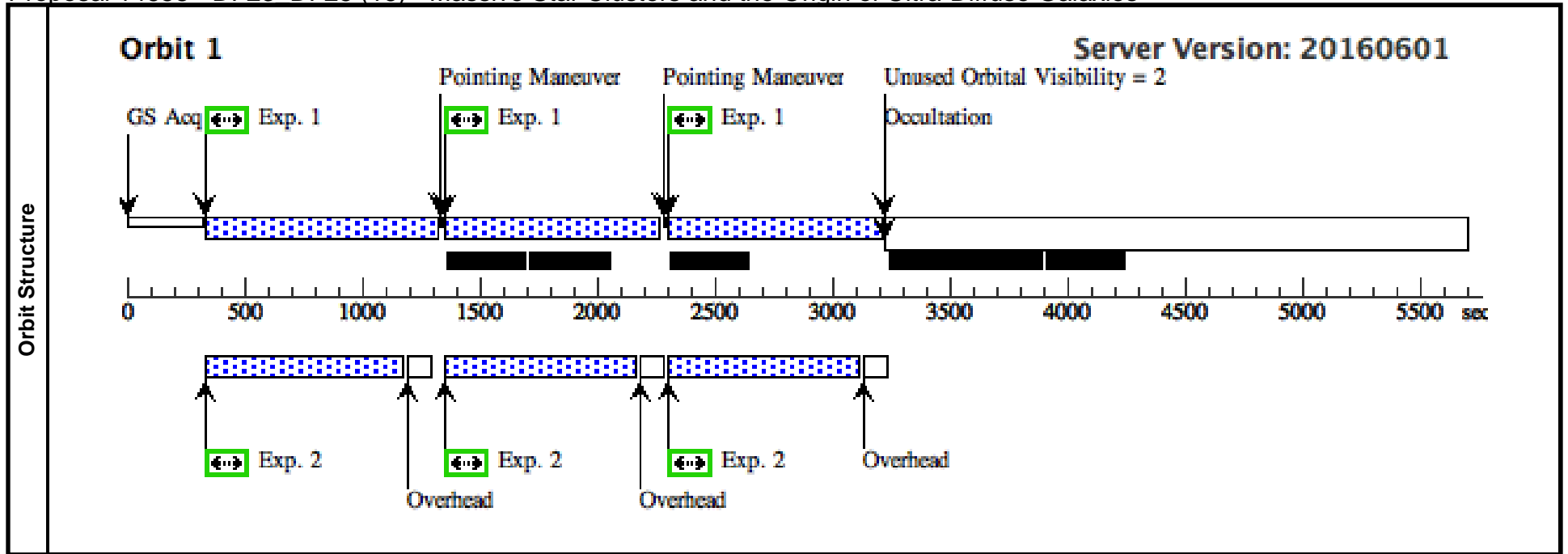
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(18) DF22	ACS/WFC, ACCUM, WFC1	F606W				Pattern 1, Exps 1-1 in DF22 (15) (1)	786 Secs (2358 Secs)
									[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]



Proposal 14658 - DF23 DF25 (16) - Massive Star Clusters and the Origin of Ultra-Diffuse Galaxies

Wed Sep 07 21:50:44 GMT 2016

Visit	Proposal 14658, DF23_DF25 (16), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: ORIENT 215D TO 235 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
	(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.3 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=42 Angle Between Sides= Center Pattern=false		(1-2)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(19)	DF23	RA: 12 59 23.8000 (194.8491667d) Dec: +27 47 27.00 (27.79083d) Equinox: J2000		V=20.0	Reference Frame: ICRS				
	(20)	DF25	RA: 12 59 48.7000 (194.9529167d) Dec: +27 46 39.00 (27.77750d) Equinox: J2000		V=20.0	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(20) DF25	ACS/WFC, ACCUM, WFC1	F606W		POS TARG 30.0685 5793543089,-14.745 297867442606	Pattern 1, Exps 1-2 in DF23_DF25 (16) (1) Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in DF23_DF25 (16)	786 Secs (2358 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[1]
	2		(19) DF23	WFC3/UVIS, ACCUM, UVIS1	F606W			Pattern 1, Exps 1-2 in DF23_DF25 (16) (1) Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in DF23_DF25 (16)	750 Secs (2445 Secs) [==>815.0 Secs (Pattern 1)] [==>815.0 Secs (Pattern 2)] [==>815.0 Secs (Pattern 3)]	[1]



Visit	Proposal 14658, DF29 (17), implementation Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC Special Requirements: (none)									
	Patterns	# (1)	Primary Pattern Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.3 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=42 Angle Between Sides= Center Pattern=false	Secondary Pattern	Exposures (1)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(23)	DF29	RA: 12 58 5.0000 (194.5208333d) Dec: +27 43 59.00 (27.73306d) Equinox: J2000		V=20.0	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(23) DF29	ACS/WFC, ACCUM, WFC1	F606W			Pattern 1, Exps 1-1 in DF29 (17) (1)	786 Secs (2358 Secs)	
									[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]
Orbit Structure	<div style="display: flex; justify-content: space-between;"> Orbit 1 Server Version: 20160601 </div> <p>The diagram illustrates the orbit structure for Orbit 1. The x-axis represents time in seconds, ranging from 0 to 5500. Key events are marked: GS Acq (Green Square Acquisition) at approximately 300 seconds, followed by Exp. 1 (Exposure 1) at 400 seconds. Two Pointing Maneuvers occur at approximately 1400 and 2400 seconds, each followed by an Exp. 1. An Occultation event is shown at approximately 3300 seconds. The observation period, indicated by a blue checkered bar, spans from approximately 300 seconds to 3300 seconds. The remaining time from 3500 seconds to 5500 seconds is labeled as 'Unused Orbital Visibility = 2'.</p>									

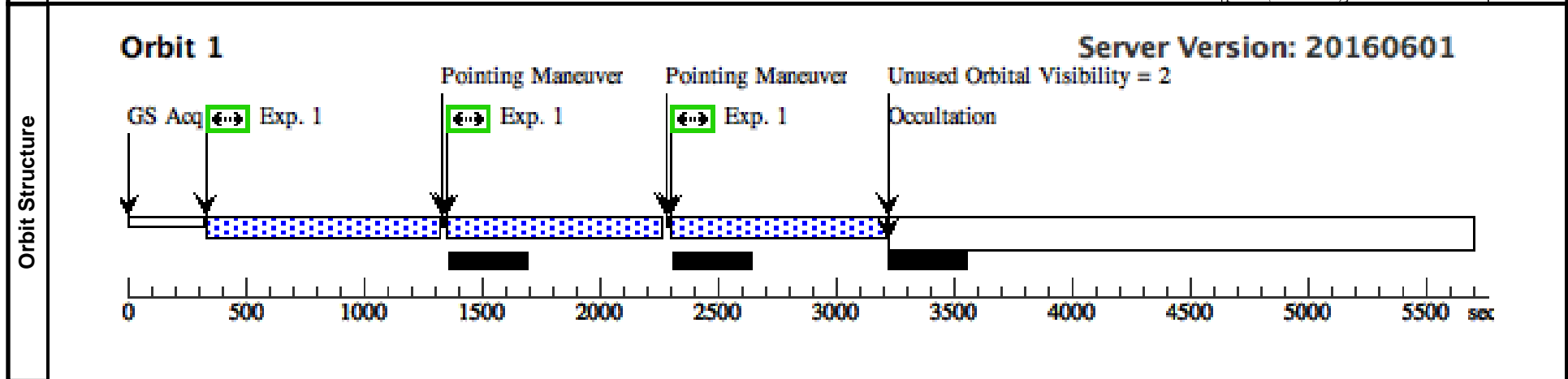
Visit	Proposal 14658, DF30 (18), implementation Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC Special Requirements: (none)									
	Patterns	# (1)	Primary Pattern Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.3 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=42 Angle Between Sides= Center Pattern=false	Secondary Pattern	Exposures (1)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(24)	DF30	RA: 12 53 15.1000 (193.3129167d) Dec: +27 41 15.00 (27.68750d) Equinox: J2000		V=19.5	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(24) DF30	ACS/WFC, ACCUM, WFC1	F606W			Pattern 1, Exps 1-1 i n DF30 (18) (1)	786 Secs (2358 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]
Orbit Structure	<div style="display: flex; justify-content: space-between;"> Orbit 1 Server Version: 20160601 </div> <p>The diagram illustrates the orbit structure for Orbit 1. The x-axis represents time in seconds, ranging from 0 to 5500. Key events are marked: GS Acq (Green Acquisition) at approximately 300 seconds, followed by Exp. 1 (Exposure 1) at approximately 400 seconds. Two Pointing Maneuvers occur at approximately 1400 and 2400 seconds, each followed by another Exp. 1. An Occultation event is shown at approximately 3300 seconds. The period from approximately 3500 to 5500 seconds is labeled as 'Unused Orbital Visibility = 2'. A blue checkered bar indicates the active observation period from approximately 400 to 3300 seconds.</p>									

Visit	Proposal 14658, DF31 (19), implementation		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: ACS/WFC		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.3 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=42 Angle Between Sides= Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(25)	DF31		RA: 12 55 6.2000 (193.7758333d) Dec: +27 37 27.00 (27.62417d) Equinox: J2000		V=20.5

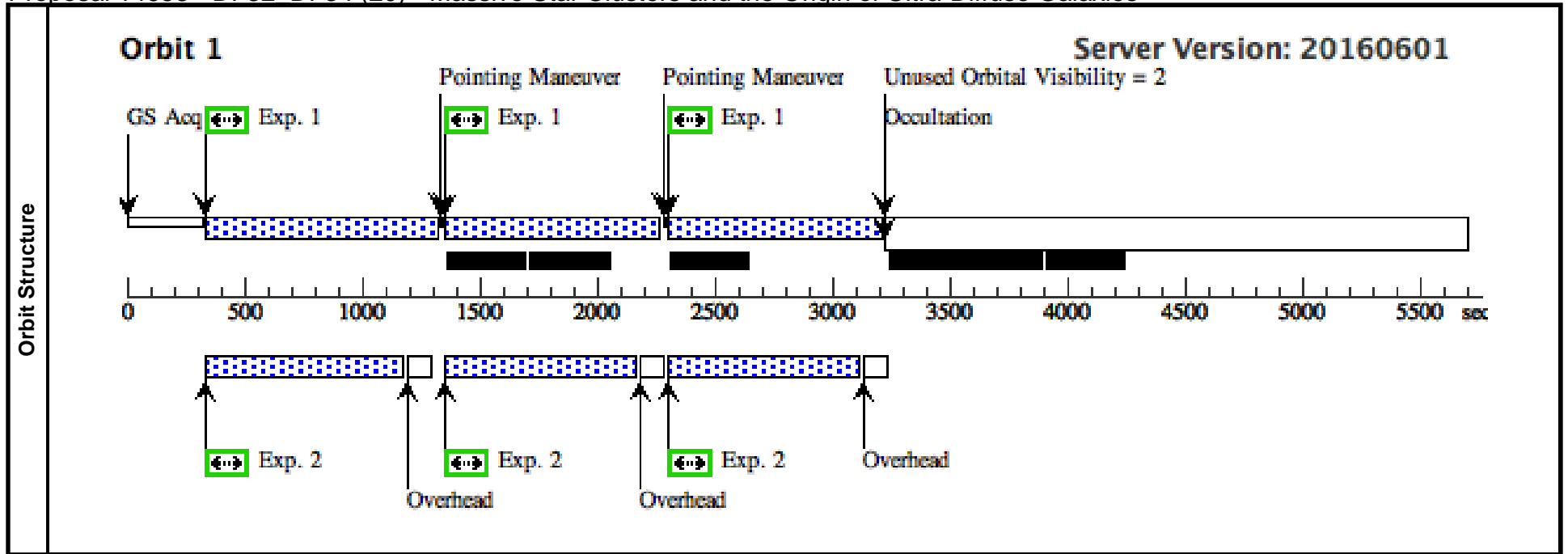
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(25) DF31		ACS/WFC, ACCUM, WFC1	F606W			Pattern 1, Exps 1-1 in DF31 (19) (1)	786 Secs (2358 Secs)
									[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]



Proposal 14658 - DF32 DF34 (20) - Massive Star Clusters and the Origin of Ultra-Diffuse Galaxies

Wed Sep 07 21:50:45 GMT 2016

Visit	Proposal 14658, DF32_DF34 (20), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: ORIENT 170D TO 185 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
		(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.3 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=42 Angle Between Sides= Center Pattern=false		(1-2)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(26)	DF32	RA: 12 56 28.4000 (194.1183333d) Dec: +27 37 6.00 (27.61833d) Equinox: J2000		V=20.5	Reference Frame: ICRS				
	(27)	DF34	RA: 12 56 12.9000 (194.0537500d) Dec: +27 32 52.00 (27.54778d) Equinox: J2000		V=21.0	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(26) DF32	ACS/WFC, ACCUM, WFC2	F606W		POS TARG 0.54586 92423752485,22.847 29077779437	Pattern 1, Exps 1-2 in DF32_DF34 (20) (1) Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in DF32_DF34 (20)	786 Secs (2358 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[1]
	2		(27) DF34	WFC3/UVIS, ACCUM, UVIS1	F606W			Pattern 1, Exps 1-2 in DF32_DF34 (20) (1) Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in DF32_DF34 (20)	750 Secs (2445 Secs) [==>815.0 Secs (Pattern 1)] [==>815.0 Secs (Pattern 2)] [==>815.0 Secs (Pattern 3)]	[1]

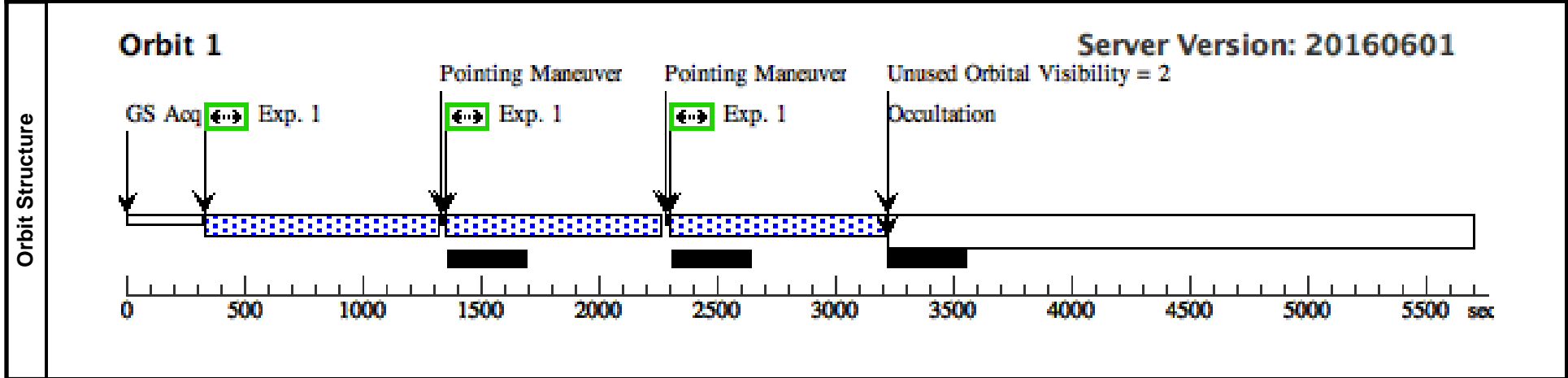


Visit	Proposal 14658, DF35 (21), implementation		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: ACS/WFC		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.3 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=42 Angle Between Sides= Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(28)	DF35	RA: 13 00 35.7000 (195.1487500d) Dec: +27 29 51.00 (27.49750d) Equinox: J2000		V=20.5	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(28) DF35	ACS/WFC, ACCUM, WFC1	F606W				Pattern 1, Exps 1-1 in DF35 (21) (1)	786 Secs (2358 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]

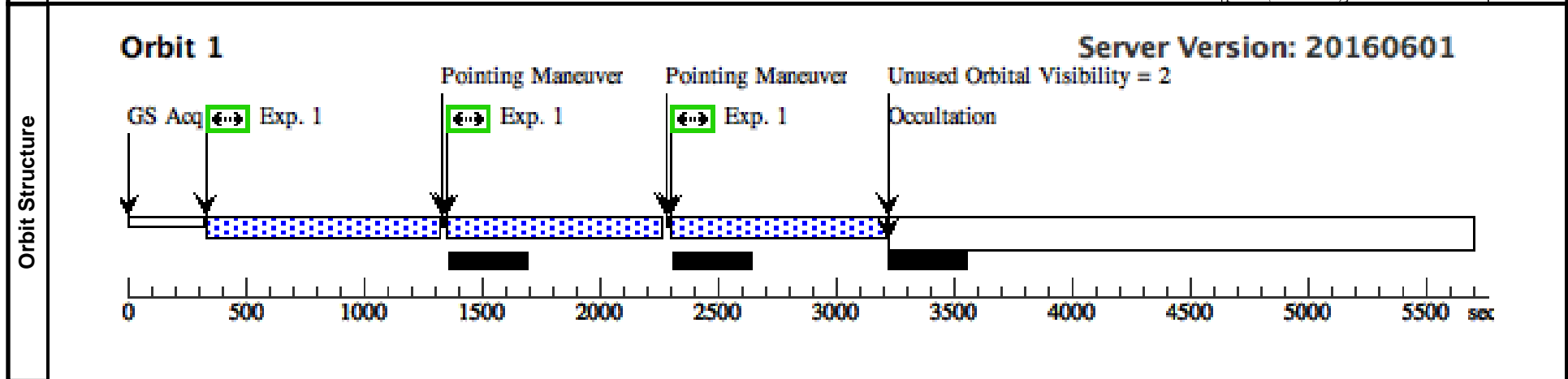


Visit	Proposal 14658, DF36 (22), implementation		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: ACS/WFC		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.3 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=42 Angle Between Sides= Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(29)	DF36	RA: 12 55 55.4000 (193.9808333d) Dec: +27 27 36.00 (27.46000d) Equinox: J2000		V=20.0	Reference Frame: ICRS

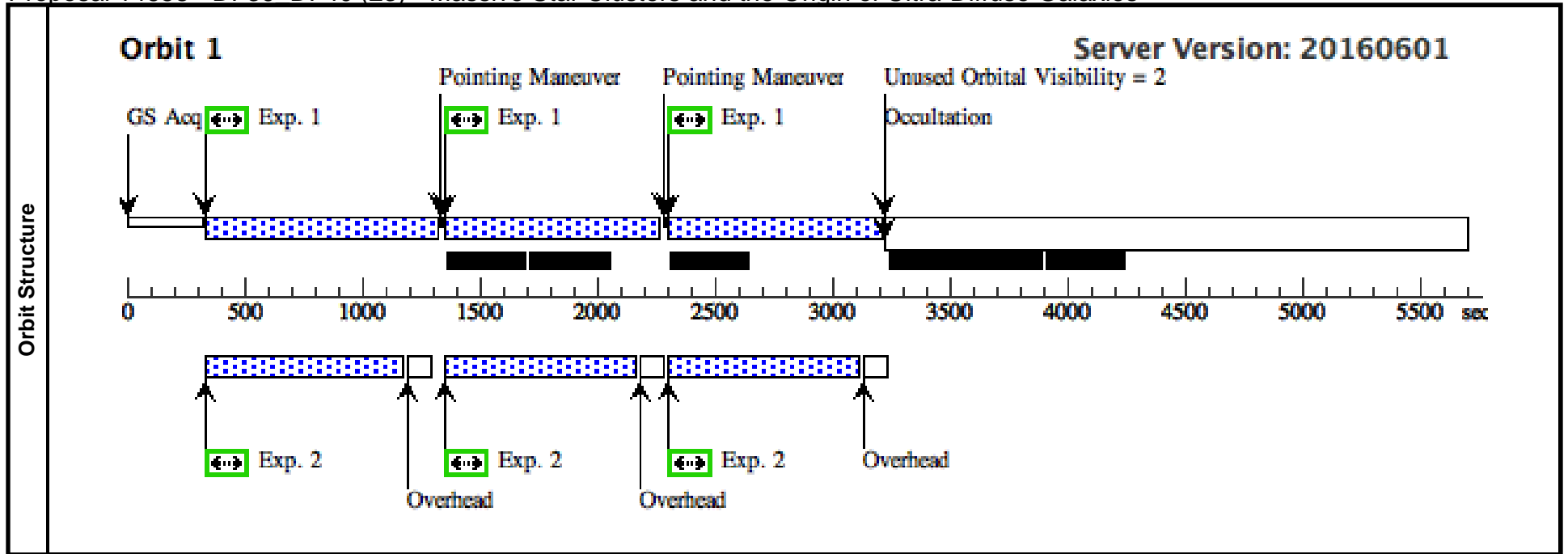
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(29) DF36	ACS/WFC, ACCUM, WFC1	F606W				Pattern 1, Exps 1-1 in DF36 (22) (1)	786 Secs (2358 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]



Proposal 14658 - DF39 DF40 (23) - Massive Star Clusters and the Origin of Ultra-Diffuse Galaxies

Wed Sep 07 21:50:45 GMT 2016

Visit	Proposal 14658, DF39_DF40 (23), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: ORIENT 140D TO 155 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
		(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.3 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=42 Angle Between Sides= Center Pattern=false		(1-2)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(30)	DF39	RA: 12 58 8.8292 (194.5367883d) Dec: +27 17 47.13 (27.29643d) Equinox: J2000		V=20.0	Reference Frame: ICRS				
	(31)	DF40	RA: 12 58 1.1000 (194.5045833d) Dec: +27 11 26.00 (27.19056d) Equinox: J2000		V=20.0	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(30) DF39	ACS/WFC, ACCUM, WFC	F606W			Pattern 1, Exps 1-2 in DF39_DF40 (23) (1) Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in DF39_DF40 (23)	786 Secs (2358 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)]	[1]
	2		(31) DF40	WFC3/UVIS, ACCUM, UVIS1	F606W			Pattern 1, Exps 1-2 in DF39_DF40 (23) (1) Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in DF39_DF40 (23)	750 Secs (2445 Secs) [==>815.0 Secs (Pattern 1)] [==>815.0 Secs (Pattern 2)] [==>815.0 Secs (Pattern 3)]	[1]



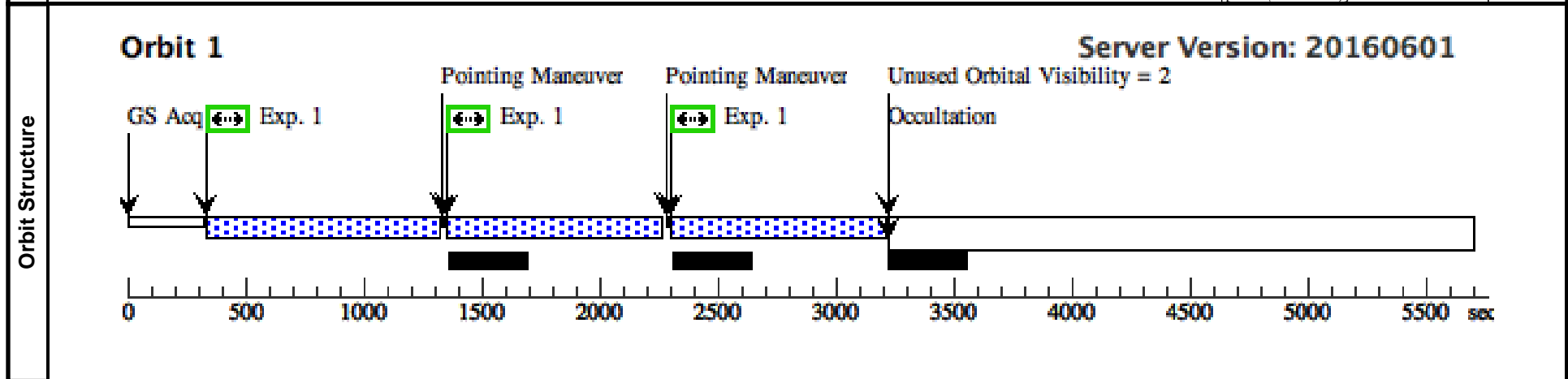
Visit	Proposal 14658, DF41 (24), implementation Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC Special Requirements: (none)									
	Patterns	# (1)	Primary Pattern Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.3 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=42 Angle Between Sides= Center Pattern=false	Secondary Pattern	Exposures (1)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(32)	DF41	RA: 12 57 19.0000 (194.3291667d) Dec: +27 05 56.00 (27.09889d) Equinox: J2000		V=20.0	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(32) DF41	ACS/WFC, ACCUM, WFC1	F606W			Pattern 1, Exps 1-1 in DF41 (24) (1)	786 Secs (2358 Secs)	
									[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]
Orbit Structure	<div style="display: flex; justify-content: space-between;"> Orbit 1 Server Version: 20160601 </div> <p>The diagram illustrates the orbit structure for Orbit 1. The x-axis represents time in seconds, ranging from 0 to 5500. Key events are marked: 'GS Acq' (Greenhouse Acquisition) at approximately 300 seconds, followed by 'Exp. 1' (Exposure 1) at approximately 400 seconds. Two 'Pointing Maneuvers' occur at approximately 1400 and 2400 seconds. A period of 'Unused Orbital Visibility = 2' is shown starting at approximately 3200 seconds, followed by 'Occultation' at approximately 3300 seconds. A blue checkered bar indicates the primary observation period, which is interrupted by black bars representing occultation events.</p>									

Visit	Proposal 14658, DF46 (26), implementation		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: ACS/WFC		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.3 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=42 Angle Between Sides= Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(35)	DF46	RA: 13 00 47.3000 (195.1970833d) Dec: +26 46 59.00 (26.78306d) Equinox: J2000		V=20.0	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(35) DF46	ACS/WFC, ACCUM, WFC1	F606W				Pattern 1, Exps 1-1 in DF46 (26) (1)	786 Secs (2358 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]



Visit	Proposal 14658, DF47 (27), implementation		
	Diagnostic Status: No Diagnostics		
	Scientific Instruments: ACS/WFC		
	Special Requirements: (none)		

Patterns	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.3 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=42 Angle Between Sides= Center Pattern=false	

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(36)	DF47		RA: 12 55 48.1000 (193.9504167d) Dec: +26 33 53.00 (26.56472d) Equinox: J2000		V=20.0

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(36) DF47		ACS/WFC, ACCUM, WFC1	F606W			Pattern 1, Exps 1-1 in DF47 (27) (1)	786 Secs (2358 Secs)
									[=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)]	[1]

