



# 15183 - An emerging population of stripped, but isolated, stellar systems in the Virgo Cluster

Cycle: 25, 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) BLUECAND1	ACS/WFC	2	05-Mar-2019 11:02:13.0	yes
02	(2) BLUECAND2	ACS/WFC	2	05-Mar-2019 11:02:14.0	yes
03	(4) BLUECAND3	ACS/WFC	2	05-Mar-2019 11:02:16.0	yes
04	(5) BLUECAND4	ACS/WFC	2	05-Mar-2019 11:02:17.0	yes
54	(5) BLUECAND4	ACS/WFC	2	05-Mar-2019 11:02:18.0	yes
05	(6) BLUECAND5	ACS/WFC	2	05-Mar-2019 11:02:19.0	yes

12 Total Orbits Used

## **ABSTRACT**

We have recently uncovered a unique dwarf-like galaxy in the Virgo Cluster: a diffuse, low mass system with solely young stellar populations located at least 350 kpc from the nearest massive galaxy. We hypothesize that this galaxy may be formed from ram pressure stripped gas, making it distinct from other, similar systems such as tidal dwarfs.

We request 10 orbits of HST/ACS to image a well-defined sample of five similar objects in Virgo which we postulate may also be "ram pressure dwarfs." This data will allow us to measure the basic physical properties of this emerging class of objects, including their structure, luminosity, and star formation history. HST data is also needed to constrain any old stellar population; if present, it would be indicative of a standard dwarf galaxy origin rather than newly formed stars from stripped gas. With these observations we will better understand the fate of stripped gas in the cluster environment, and test whether we have uncovered a new class of isolated stellar systems formed through cluster interactions.

## **OBSERVING DESCRIPTION**

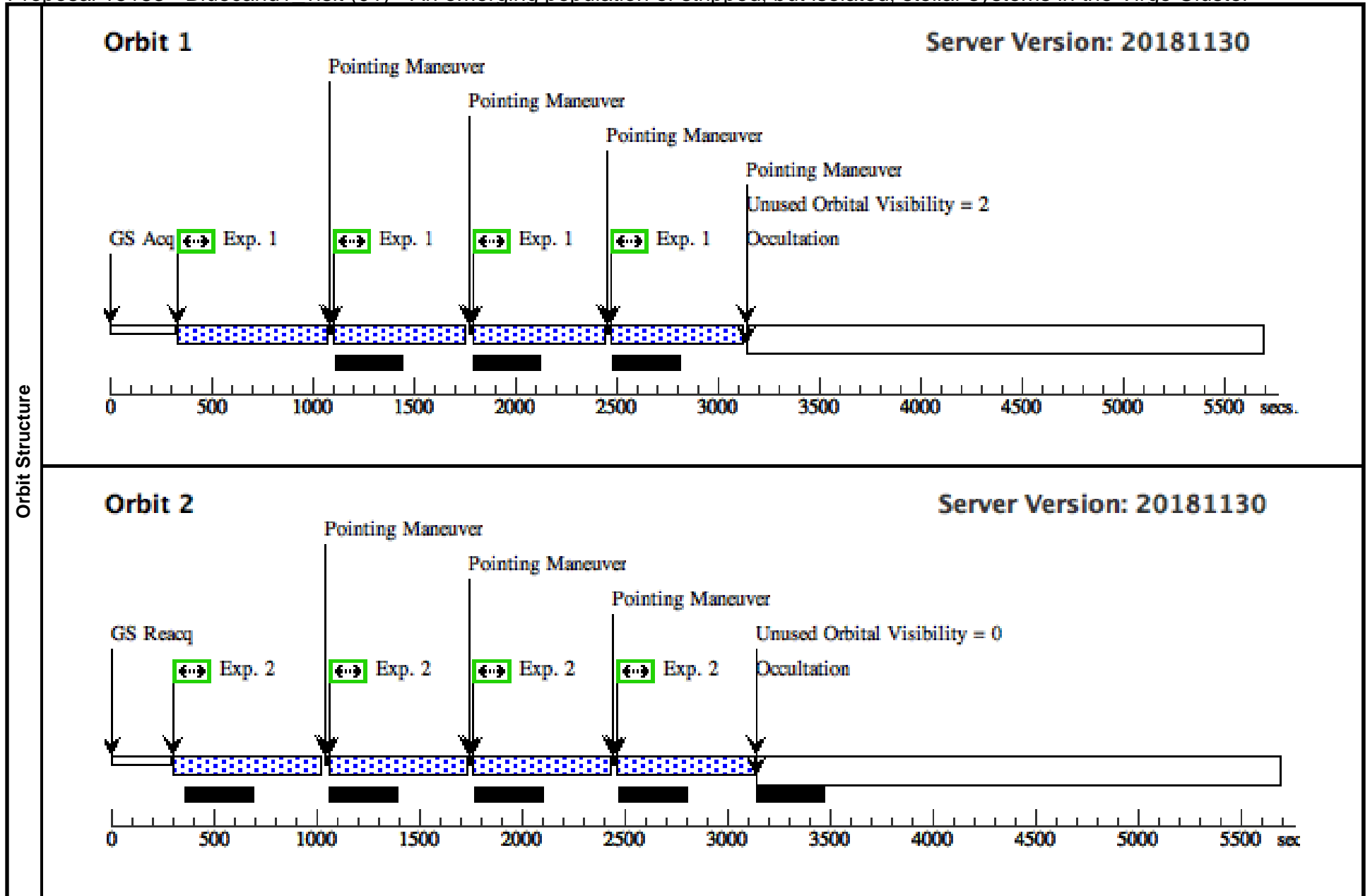
Our primary science goal is to determine the basic physical properties -- luminosity, structure, and star formation history -- of a newly discovered sample of isolated blue star-forming regions (which we have dubbed "ram pressure dwarfs") projected onto the Virgo Cluster. Aside from a relatively standard star formation history analysis, we also wish to constrain any old stellar population, for which we have two separate approaches -- both a direct search for resolved red giant branch stars and an inventory of all of the diffuse stellar light associated with each object.

We aim for comparable data to that of AGC 226067 (Sand et al. 2017), the prototype of the stellar systems we are investigating. We thus will request a single orbit of ACS imaging in both the F606W and F814W bands for each of our five targets (S/N~5 at 26.7-26.8 mag in both bands, according to the ETC). Optical magnitudes and colors (F606W, F814W) will allow us to measure the structure of the stellar systems, and to constrain their star formation history (see Fig 1; Sand et al. 2017). Additionally, we will use the resulting color magnitude diagrams and diffuse light component of each object to constrain any old stellar component.

Proposal 15183 - Bluecand1 visit (01) - An emerging population of stripped, but isolated, stellar systems in the Virgo Cluster

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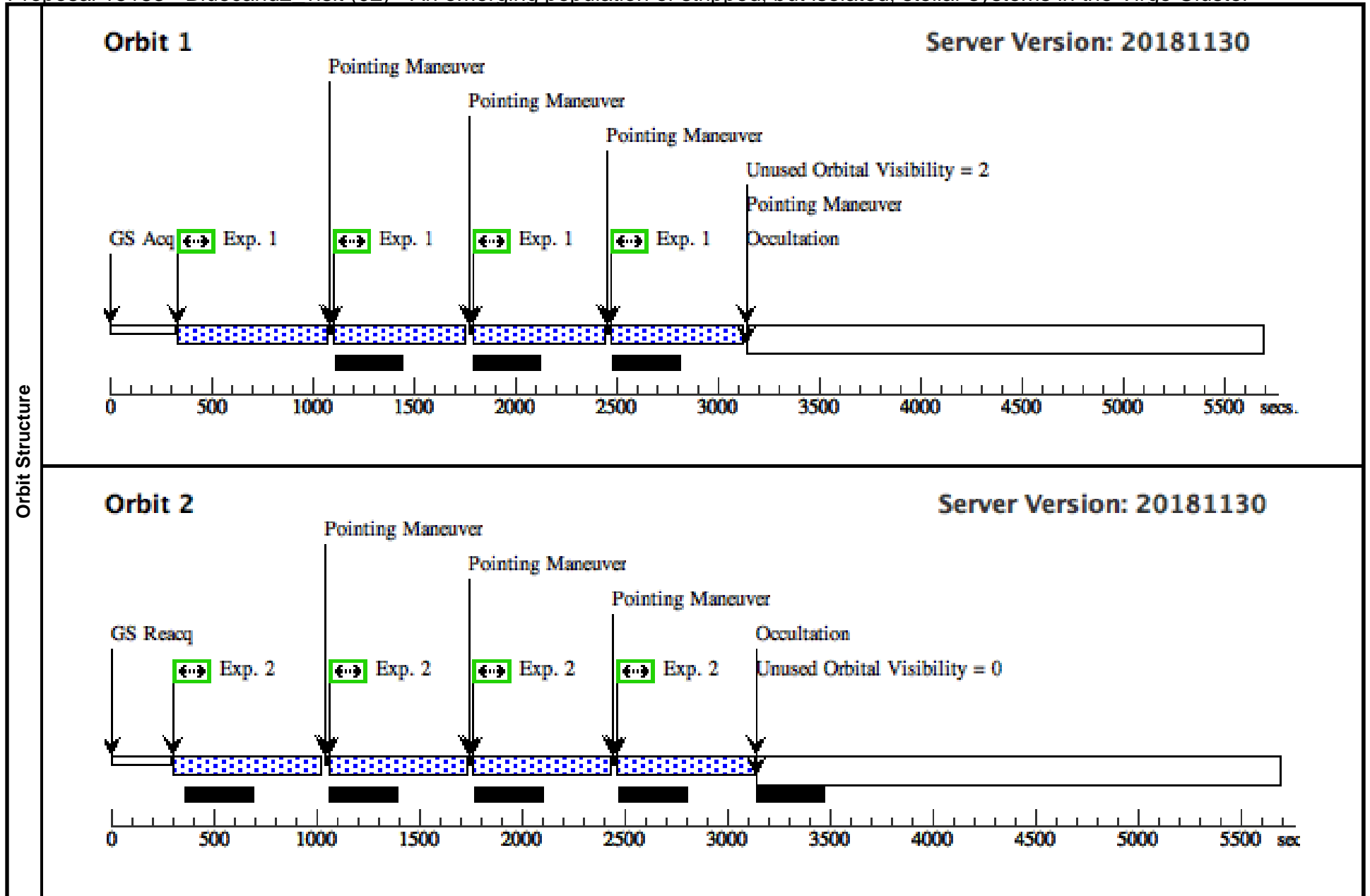
Visit	<b>Proposal 15183, Bluecand1_visit (01), completed</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: ACS/WFC Special Requirements: (none)									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
		(2)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.262 Line Spacing=0.192	Coordinate Frame=POS-TARG Pattern Orientation=18.39 Angle Between Sides=68.14 Center Pattern=false		(1), (2)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	BLUECAND1	RA: 12 39 1.5700 (189.7565417d) Dec: +12 12 18.02 (12.20501d) Equinox: J2000		V=20.0+/-0.5	Reference Frame: ICRS				
	<i>Comments:</i> Category=GALAXY Description=[AMORPHOUS IRREGULAR] Extended=YES									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	ACS F606W	(1) BLUECAND1	ACS/WFC, ACCUM, WFC1	F606W			Pattern 2, Exps 1-1 in Bluecand1_visit (01) (2)	520 Secs (2120 Secs) [==>530.0 Secs (Pattern 1)] [==>530.0 Secs (Pattern 2)] [==>530.0 Secs (Pattern 3)] [==>530.0 Secs (Pattern 4)]	[1]
	2	ACS F814W	(1) BLUECAND1	ACS/WFC, ACCUM, WFC1	F814W			Pattern 2, Exps 2-2 in Bluecand1_visit (01) (2)	520 Secs (2180 Secs) [==>545.0 Secs (Pattern 1)] [==>545.0 Secs (Pattern 2)] [==>545.0 Secs (Pattern 3)] [==>545.0 Secs (Pattern 4)]	[2]



Proposal 15183 - Bluecand2 visit (02) - An emerging population of stripped, but isolated, stellar systems in the Virgo Cluster

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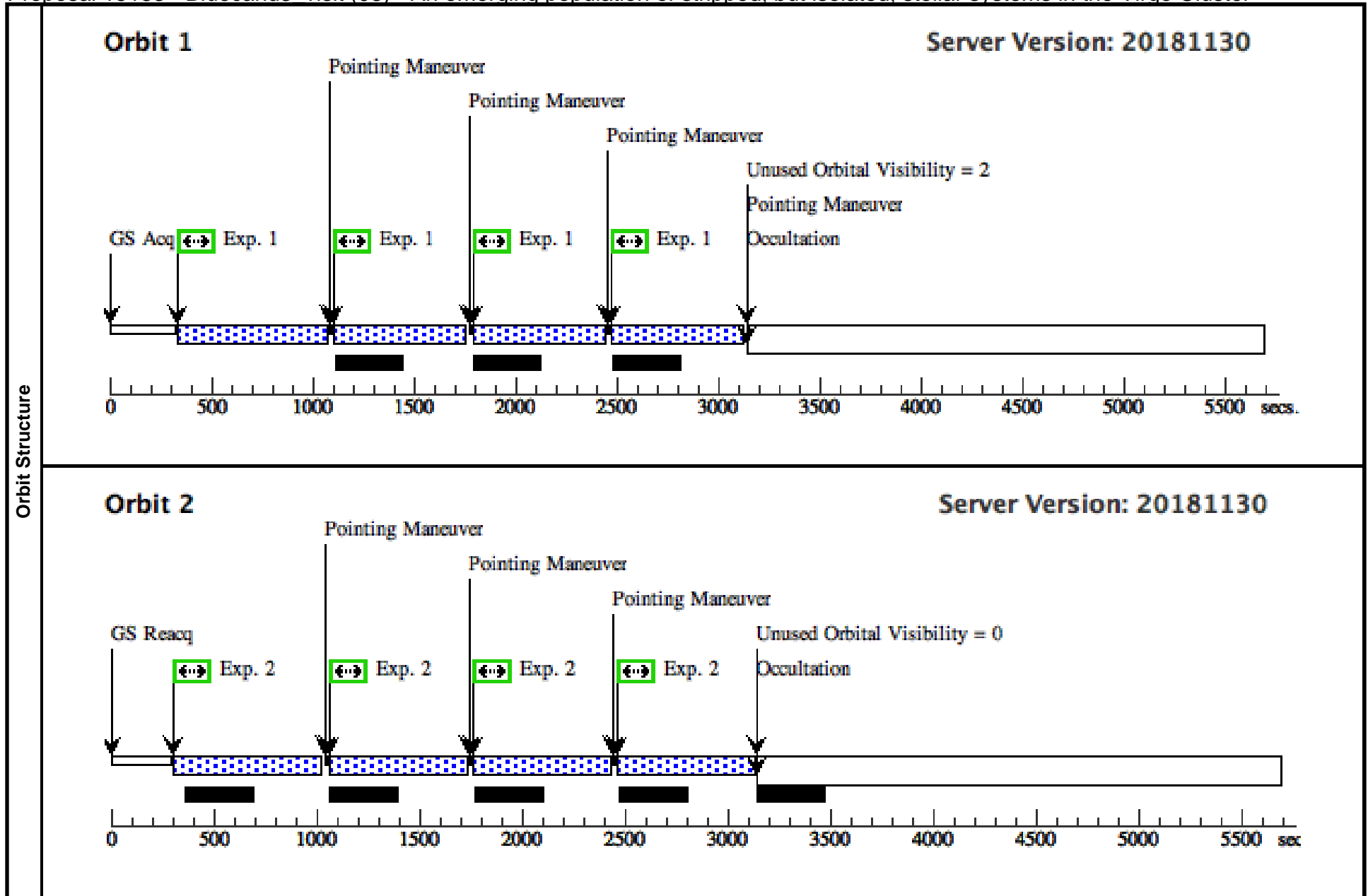
Visit	<b>Proposal 15183, Bluecand2_visit (02), scheduling</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: ACS/WFC Special Requirements: (none)									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
	(2)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.262 Line Spacing=0.192	Coordinate Frame=POS-TARG Pattern Orientation=18.39 Angle Between Sides=68.14 Center Pattern=false		(1), (2)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(2)	BLUECAND2	RA: 12 44 27.5400 (191.1147500d) Dec: +12 37 5.67 (12.61824d) Equinox: J2000		V=20.0+/-0.5	Reference Frame: ICRS				
	<i>Comments:</i> Category=GALAXY Description=[AMORPHOUS IRREGULAR] Extended=YES									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	ACS F606W	(2) BLUECAND2	ACS/WFC, ACCUM, WFC1	F606W			Pattern 2, Exps 1-1 in Bluecand2_visit (02) (2)	520 Secs (2120 Secs) [==>530.0 Secs (Pattern 1)] [==>530.0 Secs (Pattern 2)] [==>530.0 Secs (Pattern 3)] [==>530.0 Secs (Pattern 4)]	[1]
	2	ACS F814W	(2) BLUECAND2	ACS/WFC, ACCUM, WFC1	F814W			Pattern 2, Exps 2-2 in Bluecand2_visit (02) (2)	520 Secs (2180 Secs) [==>545.0 Secs (Pattern 1)] [==>545.0 Secs (Pattern 2)] [==>545.0 Secs (Pattern 3)] [==>545.0 Secs (Pattern 4)]	[2]



Proposal 15183 - Bluecand3 visit (03) - An emerging population of stripped, but isolated, stellar systems in the Virgo Cluster

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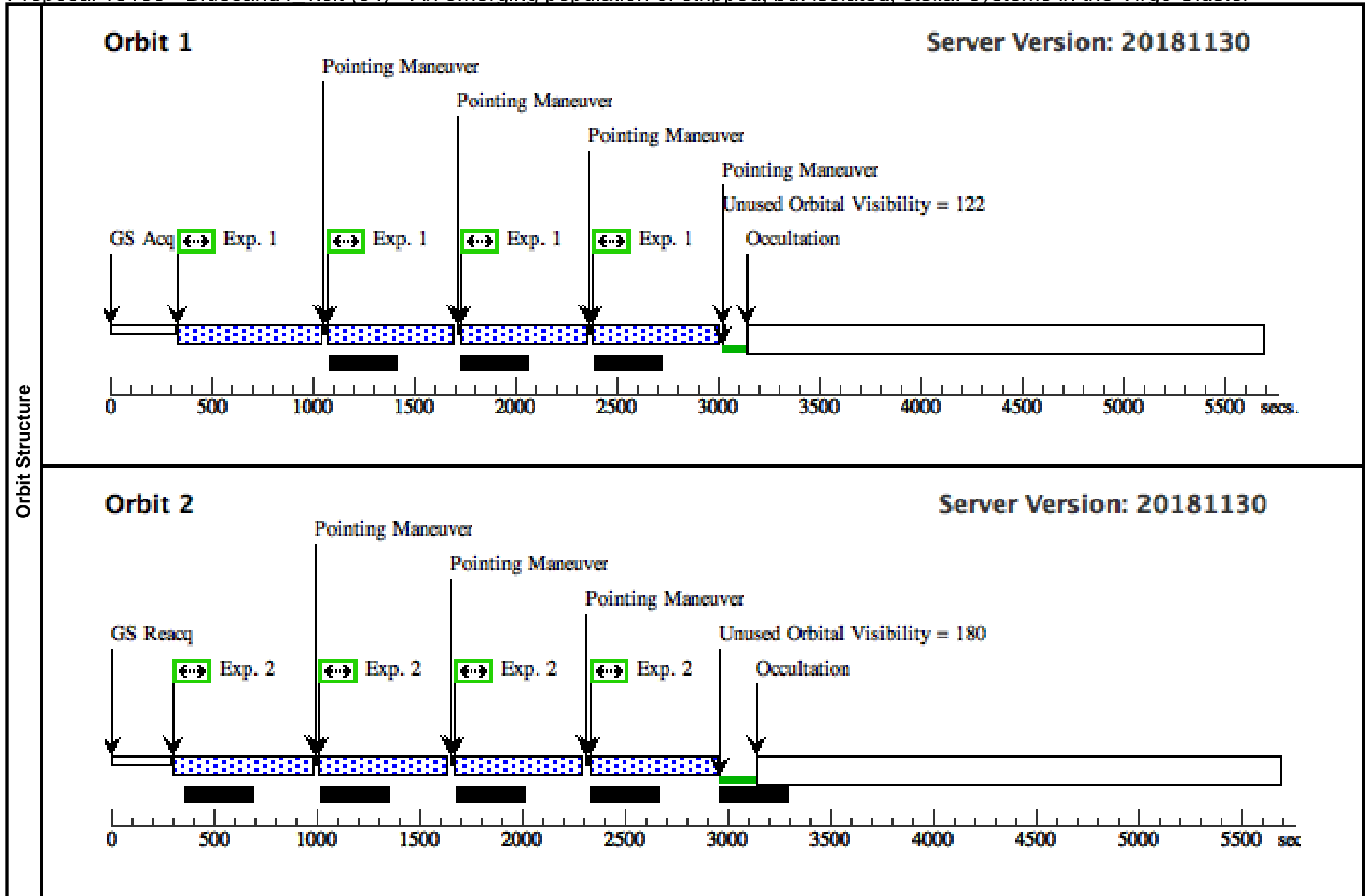
<b>Visit</b>	<b>Proposal 15183, Bluecand3_visit (03), completed</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: ACS/WFC Special Requirements: ORIENT 55.8D TO 100.0 D; ORIENT 232.0D TO 274. D <i>Comments: We have added relatively loose ORIENT constraints on this visit in order to simultaneously image a nearby Virgo dwarf galaxy that may be interacting with our blue blob.</i>									
	<b>Patterns</b>	# (2)	<b>Primary Pattern</b> Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.262 Line Spacing=0.192	<b>Secondary Pattern</b> Coordinate Frame=POS-TARG Pattern Orientation=18.39 Angle Between Sides=68.14 Center Pattern=false	<b>Exposures</b> (1), (2)					
<b>Fixed Targets</b>	# (4)	<b>Name</b> BLUECAND3	<b>Target Coordinates</b> RA: 12 46 42.4500 (191.6768750d) Dec: +10 22 7.60 (10.36878d) Equinox: J2000	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b> V=20.0 +/-0.5	<b>Miscellaneous</b> Reference Frame: ICRS  <i>Comments:                  Category=GALAXY                  Description=[AMORPHOUS IRREGULAR]                  Extended=YES</i>				
<b>Exposures</b>	# 1	<b>Label</b> ACS F606W (4) BLUECAND3	<b>Target</b>	<b>Config,Mode,Aperture</b> ACS/WFC, ACCUM, WFC1	<b>Spectral Els.</b> F606W	<b>Opt. Params.</b>	<b>Special Reqs.</b>	<b>Groups</b> Pattern 2, Exps 1-1 in Bluecand3_visit (03) (2)	<b>Exp. Time (Total)/[Actual Dur.]</b> 520 Secs (2120 Secs) [==>530.0 Secs (Pattern 1)] [==>530.0 Secs (Pattern 2)] [==>530.0 Secs (Pattern 3)] [==>530.0 Secs (Pattern 4)]	<b>Orbit</b> [1]
	2	ACS F814W (4) BLUECAND3		ACS/WFC, ACCUM, WFC1	F814W			Pattern 2, Exps 2-2 in Bluecand3_visit (03) (2)	520 Secs (2180 Secs) [==>545.0 Secs (Pattern 1)] [==>545.0 Secs (Pattern 2)] [==>545.0 Secs (Pattern 3)] [==>545.0 Secs (Pattern 4)]	[2]



Proposal 15183 - Bluecand4 visit (04) - An emerging population of stripped, but isolated, stellar systems in the Virgo Cluster

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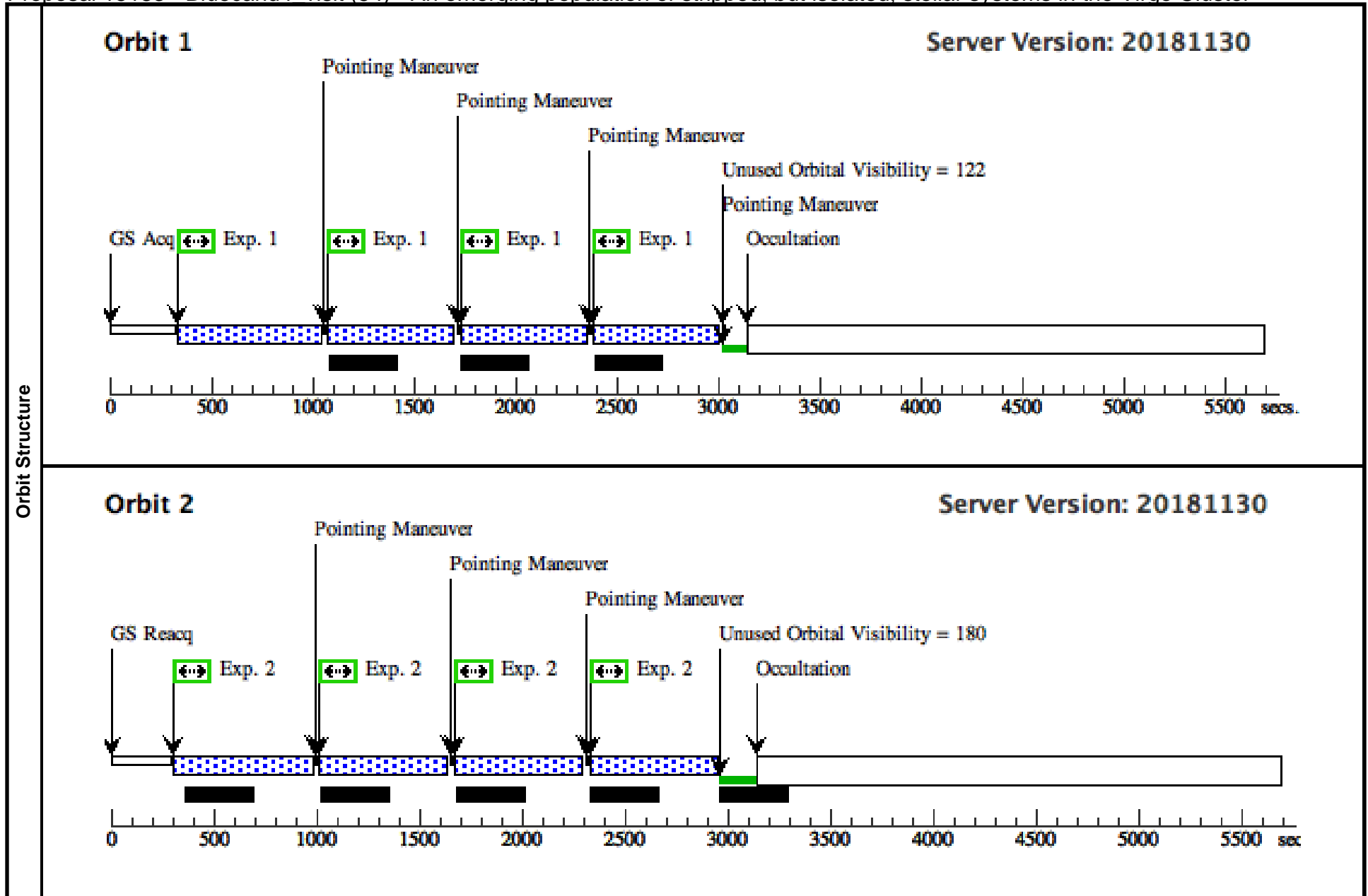
Visit	<b>Proposal 15183, Bluecand4_visit (04), failed</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: ACS/WFC Special Requirements: ORIENT 355D TO 50 D; ORIENT 170D TO 230 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
	(2)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.262 Line Spacing=0.192	Coordinate Frame=POS-TARG Pattern Orientation=18.39 Angle Between Sides=68.14 Center Pattern=false		(1), (2)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(5)	BLUECAND4	RA: 12 26 23.5532 (186.5981383d) Dec: +14 23 24.50 (14.39014d) Equinox: J2000		V=20.0+/-0.5	Reference Frame: ICRS				
	<i>Comments:</i> Category=GALAXY Description=[AMORPHOUS IRREGULAR] Extended=YES									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	ACS F606W	(5) BLUECAND4	ACS/WFC, ACCUM, WFC1	F606W			Pattern 2, Exps 1-1 i n Bluecand4_visit (0 4) (2)	500 Secs (2000 Secs)	
									[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]
2	ACS F814W	(5) BLUECAND4	ACS/WFC, ACCUM, WFC1	F814W			Pattern 2, Exps 2-2 i n Bluecand4_visit (0 4) (2)	500 Secs (2000 Secs)		
								[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[2]	



Proposal 15183 - Bluecand4 visit (54) - An emerging population of stripped, but isolated, stellar systems in the Virgo Cluster

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Visit	<b>Proposal 15183, Bluecand4_visit (54)</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: ACS/WFC Special Requirements: ORIENT 355D TO 50 D; ORIENT 170D TO 230 D Comments: Repeat of Visit 04									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
		(2)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.262 Line Spacing=0.192	Coordinate Frame=POS-TARG Pattern Orientation=18.39 Angle Between Sides=68.14 Center Pattern=false		(1), (2)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(5)	BLUECAND4	RA: 12 26 23.5532 (186.5981383d) Dec: +14 23 24.50 (14.39014d) Equinox: J2000		V=20.0+/-0.5	Reference Frame: ICRS				
	Comments: Category=GALAXY Description=[AMORPHOUS IRREGULAR] Extended=YES									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	ACS F606W (5) BLUECAND4	ACS/WFC, ACCUM, WFC1	F606W				Pattern 2, Exps 1-1 in Bluecand4_visit (54) (2)	500 Secs (2000 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]
2	ACS F814W (5) BLUECAND4	ACS/WFC, ACCUM, WFC1	F814W				Pattern 2, Exps 2-2 in Bluecand4_visit (54) (2)	500 Secs (2000 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[2]	



Proposal 15183 - Bluecand5 visit (05) - An emerging population of stripped, but isolated, stellar systems in the Virgo Cluster

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Visit	<b>Proposal 15183, Bluecand5_visit (05), scheduling</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: ACS/WFC Special Requirements: (none)										
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures						
	(2)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.262 Line Spacing=0.192	Coordinate Frame=POS-TARG Pattern Orientation=18.39 Angle Between Sides=68.14 Center Pattern=false		(1), (2)						
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous					
	(6)	BLUECAND5	RA: 12 26 31.1300 (186.6297083d) Dec: +15 10 26.70 (15.17408d) Equinox: J2000		V=20.0+/-0.5	Reference Frame: ICRS					
	<i>Comments:</i> Category=GALAXY Description=[AMORPHOUS IRREGULAR] Extended=YES										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
	1	ACS F606W	(6) BLUECAND5	ACS/WFC, ACCUM, WFC1	F606W				Pattern 2, Exps 1-1 i n Bluecand5_visit (0 5) (2)	520 Secs (2128 Secs) [==>532.0 Secs (Pattern 1)] [==>532.0 Secs (Pattern 2)] [==>532.0 Secs (Pattern 3)] [==>532.0 Secs (Pattern 4)]	[1]
	2	ACS F814W	(6) BLUECAND5	ACS/WFC, ACCUM, WFC1	F814W				Pattern 2, Exps 2-2 i n Bluecand5_visit (0 5) (2)	520 Secs (2184 Secs) [==>546.0 Secs (Pattern 1)] [==>546.0 Secs (Pattern 2)] [==>546.0 Secs (Pattern 3)] [==>546.0 Secs (Pattern 4)]	[2]

