16068 - The most massive low density globular cluster

Cycle: 28, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

Name	*Institution*	*E-Mail*
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VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
05	(1) FSR1758	WFC3/UVIS	1	01-Apr-2021 07:00:15.0	yes
06	(1) FSR1758	WFC3/UVIS	1	01-Apr-2021 07:00:16.0	yes
07	(1) FSR1758	WFC3/UVIS	1	01-Apr-2021 07:00:16.0	yes
08	(1) FSR1758	WFC3/UVIS	1	01-Apr-2021 07:00:17.0	yes

4 Total Orbits Used

ABSTRACT

We propose to make a Chandra observation of a newly discovered high mass, low density globular cluster. This cluster has properties largely similar to that of Omega Centauri in terms of its stellar mass and its ratio of tidal to core radius, but its characteristic radii are a factor of about 3 larger than Omega Cen's. As a result, this is the first Milky Way cluster for which the stellar density is small enough that dynamical formation and destruction of close binaries will be unimportant, while having a large enough stellar mass that it can be expected to show some interacting binaries anyway. It will be the first object that can be used to characterize the baseline rate of production of these systems in a low metallicity, old stellar population.

OBSERVING DESCRIPTION

This proposal is to do a 2*2 mosaic with WFC3. Each observation will have 1000 seconds each in 300X and 606W, and 245 seconds in 814W. We note that in finalizing this proposal, we discovered a typo in the coordinates for the object of interest and have fixed that, which is the reason for the mismatch.

Visit

Proposal 16068, Tile Visit 05, implementation Thu Apr 01 11:00:18 GMT 2021

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: BETWEEN 01-APR-2021:00:00:00 AND 01-NOV-2021:00:00:00

Comments: This is a modification of Visit 01 as an example of using a 3-point dither for the 300X exposures and a 2-point dither for the 606W exposures, in each case replacing the cosmic-ray-split pairs of exposures. The dithers generally give a better result because they can help get rid of bad pixels or columns, and 3-point dithers give better results than 2-point dithers (or CR-split pairs). The revised visit 05 has slightly greater total exposure time in 300x, a bit less in 606W, and the same in 814W. The minimum time is 353 s to fit parallel buffer dumps in during exposures; that's why we use that.

Note that if you prefer this example Visit 05 in place of Visit 01, you should replace Visit 01 with it, and then modify Visit 2, 3, and 4 accordingly. Be careful to retain the POSTARGs so that you get your 2x2 mozaic. You may need to cut and paste the X and Y POSTARGs from Visits 2, 3, and 4 that were defined by the mosaic template. You can verify the layout using Aladin's view.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(1)
(2)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(2)

Fixed Targets

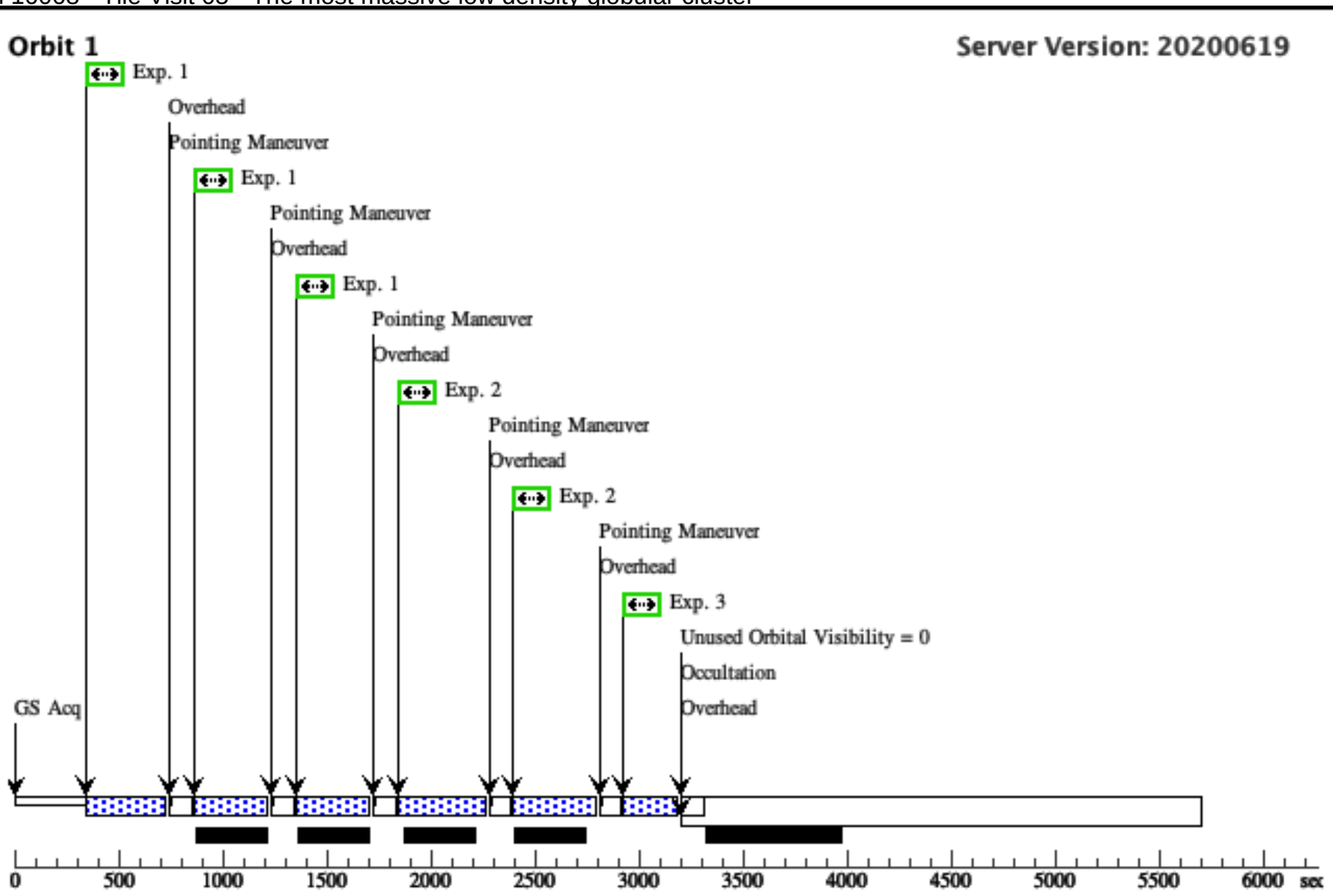
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	FSR1758	RA: 17 31 12.0000 (262.8000000d) Dec: -39 48 30.00 (-39.80833d) Equinox: J2000		V=7+/-1	Reference Frame: ICRS

Comments: The apparent magnitude of 7 is integrated over a region somewhat larger than the mosaic we propose to observe.
Category=STELLAR CLUSTER
Description=[GLOBULAR CLUSTER]
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) FSR1758	WFC3/UVIS, ACCUM, UVIS-CENTER	F300X	FLASH=10	POS TARG -73.554 87747622576,-79.37 9823084808	Pattern 1, Exps 1-1 in Tile Visit 05 (1)	353 Secs (1059 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***
2		(1) FSR1758	WFC3/UVIS, ACCUM, UVIS-CENTER	F606W		POS TARG -73.554 87747622576,-79.37 9823084808	Pattern 2, Exps 2-2 in Tile Visit 05 (2)	403 Secs (806 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	***[1]***
3		(1) FSR1758	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	FLASH=8	POS TARG -73.554 87747622576,-79.37 9823084808		237 Secs (237 Secs) *[==>]*	***[1]***

Orbit Structure



Visit

Proposal 16068, Tile Visit 06 Thu Apr 01 11:00:18 GMT 2021

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: SAME ORIENT AS 05; BETWEEN 01-APR-2021:00:00:00 AND 01-NOV-2021:00:00:00

Comments: This is a modification of Visit 01 as an example of using a 3-point dither for the 300X exposures and a 2-point dither for the 606W exposures, in each case replacing the cosmic-ray-split pairs of exposures. The dithers generally give a better result because they can help get rid of bad pixels or columns, and 3-point dithers give better results than 2-point dithers (or CR-split pairs). The revised visit 05 has slightly greater total exposure time in 300x, a bit less in 606W, and the same in 814W. The minimum time is 353 s to fit parallel buffer dumps in during exposures; that's why we use that.

Note that if you prefer this example Visit 05 in place of Visit 01, you should replace Visit 01 with it, and then modify Visit 2, 3, and 4 accordingly. Be careful to retain the POSTARGs so that you get your 2x2 mozaic. You may need to cut and paste the X and Y POSTARGs from Visits 2, 3, and 4 that were defined by the mosaic template. You can verify the layout using Aladin's view.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(1)
(2)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(2)

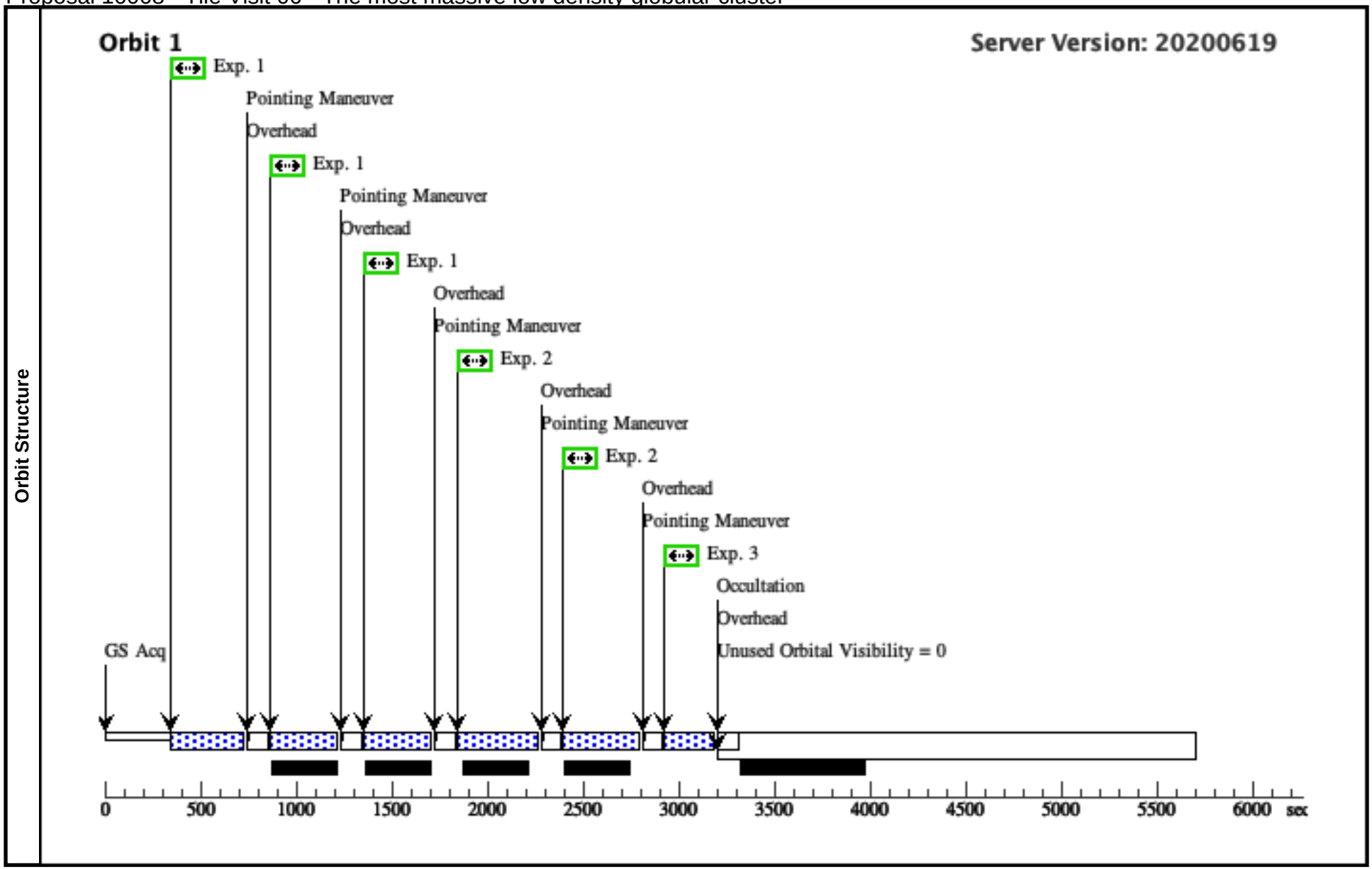
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	FSR1758	RA: 17 31 12.0000 (262.8000000d) Dec: -39 48 30.00 (-39.80833d) Equinox: J2000		V=7+/-1	Reference Frame: ICRS

Comments: The apparent magnitude of 7 is integrated over a region somewhat larger than the mosaic we propose to observe.
Category=STELLAR CLUSTER
Description=[GLOBULAR CLUSTER]
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) FSR1758	WFC3/UVIS, ACCUM, UVIS-CENTER	F300X	FLASH=10	POS TARG 73.5548 7747622576,-69.092 90691519202	Pattern 1, Exps 1-1 in Tile Visit 06 (1)	353 Secs (1059 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	 ***[1]***
2		(1) FSR1758	WFC3/UVIS, ACCUM, UVIS-CENTER	F606W		POS TARG 73.5548 7747622576,-69.092 90691519202	Pattern 2, Exps 2-2 in Tile Visit 06 (2)	403 Secs (806 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
3		(1) FSR1758	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	FLASH=8	POS TARG 73.5548 7747622576,-69.092 90691519202		237 Secs (237 Secs) *[==>]*	 ***[1]***


Orbit Structure
Orbit 1
Server Version: 20200619
Exp. 1
Pointing Maneuver
Overhead
Exp. 1
Pointing Maneuver
Overhead
Exp. 1
Overhead
Pointing Maneuver
Exp. 2
Overhead
Pointing Maneuver
Exp. 2
Overhead
Pointing Maneuver
Exp. 3
Occultation
Overhead
Unused Orbital Visibility = 0
GS Acq
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec

Visit

Proposal 16068, Tile Visit 07 Thu Apr 01 11:00:18 GMT 2021

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: SAME ORIENT AS 05; BETWEEN 01-APR-2021:00:00:00 AND 01-NOV-2021:00:00:00

Comments: This is a modification of Visit 01 as an example of using a 3-point dither for the 300X exposures and a 2-point dither for the 606W exposures, in each case replacing the cosmic-ray-split pairs of exposures. The dithers generally give a better result because they can help get rid of bad pixels or columns, and 3-point dithers give better results than 2-point dithers (or CR-split pairs). The revised visit 05 has slightly greater total exposure time in 300x, a bit less in 606W, and the same in 814W. The minimum time is 353 s to fit parallel buffer dumps in during exposures; that's why we use that.

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Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(1)
(2)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(2)

Fixed Targets

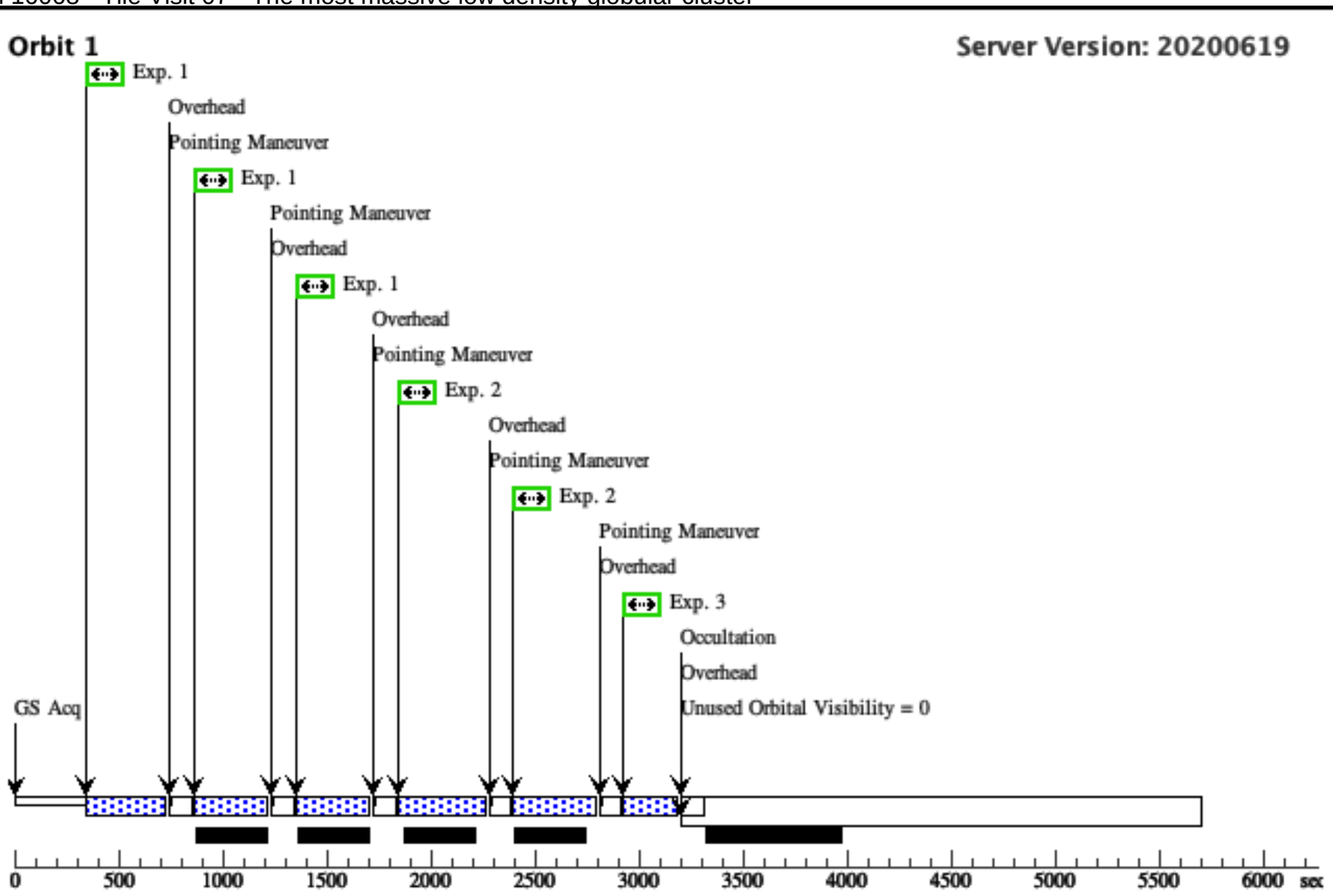
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	FSR1758	RA: 17 31 12.0000 (262.8000000d) Dec: -39 48 30.00 (-39.80833d) Equinox: J2000		V=7+/-1	Reference Frame: ICRS

Comments: The apparent magnitude of 7 is integrated over a region somewhat larger than the mosaic we propose to observe.
Category=STELLAR CLUSTER
Description=[GLOBULAR CLUSTER]
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) FSR1758	WFC3/UVIS, ACCUM, UVIS-CENTER	F300X	FLASH=10	POS TARG -73.554 87747622576,69.092 90691519202	Pattern 1, Exps 1-1 in Tile Visit 07 (1)	353 Secs (1059 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	 ***[1]***
2		(1) FSR1758	WFC3/UVIS, ACCUM, UVIS-CENTER	F606W		POS TARG -73.554 87747622576,69.092 90691519202	Pattern 2, Exps 2-2 in Tile Visit 07 (2)	403 Secs (806 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
3		(1) FSR1758	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	FLASH=8	POS TARG -73.554 87747622576,69.092 90691519202		237 Secs (237 Secs) *[==>]*	 ***[1]***

Orbit Structure



Visit

Proposal 16068, Tile Visit 08 Thu Apr 01 11:00:18 GMT 2021

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: SAME ORIENT AS 05; BETWEEN 01-APR-2021:00:00:00 AND 01-NOV-2021:00:00:00

Comments: This is a modification of Visit 01 as an example of using a 3-point dither for the 300X exposures and a 2-point dither for the 606W exposures, in each case replacing the cosmic-ray-split pairs of exposures. The dithers generally give a better result because they can help get rid of bad pixels or columns, and 3-point dithers give better results than 2-point dithers (or CR-split pairs). The revised visit 05 has slightly greater total exposure time in 300x, a bit less in 606W, and the same in 814W. The minimum time is 353 s to fit parallel buffer dumps in during exposures; that's why we use that.

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Patterns

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(1)	Pattern Type=WFC3-UVIS-DITHER-LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(1)
(2)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(2)

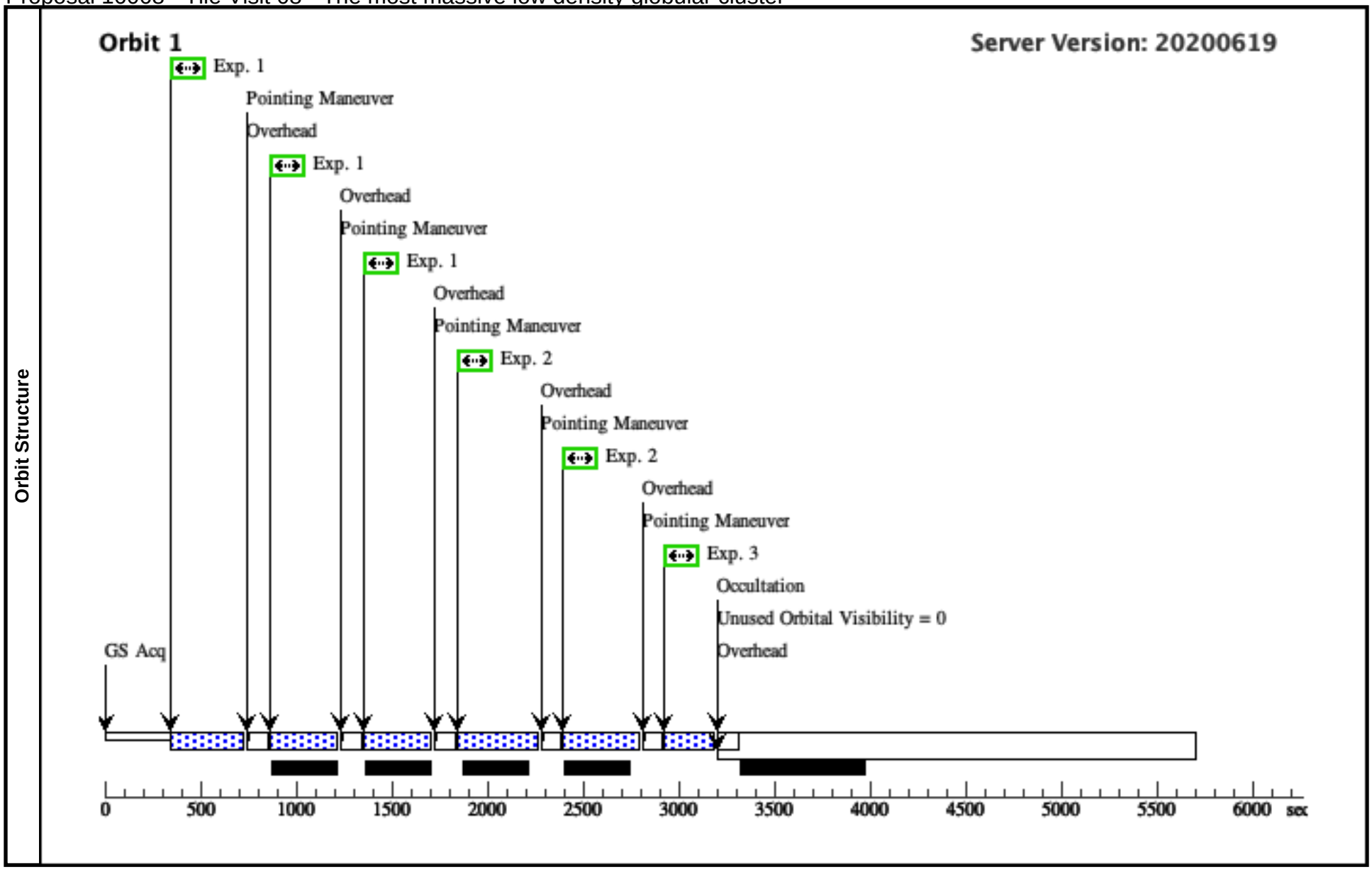
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	FSR1758	RA: 17 31 12.0000 (262.8000000d) Dec: -39 48 30.00 (-39.80833d) Equinox: J2000		V=7+/-1	Reference Frame: ICRS

Comments: The apparent magnitude of 7 is integrated over a region somewhat larger than the mosaic we propose to observe.
Category=STELLAR CLUSTER
Description=[GLOBULAR CLUSTER]
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) FSR1758	WFC3/UVIS, ACCUM, UVIS-CENTER	F300X	FLASH=10	POS TARG 73.5548 7747622576,79.3798 23084808	Pattern 1, Exps 1-1 in Tile Visit 08 (1)	353 Secs (1059 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	 ***[1]***
2		(1) FSR1758	WFC3/UVIS, ACCUM, UVIS-CENTER	F606W		POS TARG 73.5548 7747622576,79.3798 23084808	Pattern 2, Exps 2-2 in Tile Visit 08 (2)	403 Secs (806 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
3		(1) FSR1758	WFC3/UVIS, ACCUM, UVIS-CENTER	F814W	FLASH=8	POS TARG 73.5548 7747622576,79.3798 23084808		237 Secs (237 Secs) *[==>]*	 ***[1]***


Orbit Structure
Orbit 1
Server Version: 20200619
Exp. 1
Pointing Maneuver
Overhead
Exp. 1
Overhead
Pointing Maneuver
Exp. 1
Overhead
Pointing Maneuver
Exp. 2
Overhead
Pointing Maneuver
Exp. 2
Overhead
Pointing Maneuver
Exp. 3
Occultation
Unused Orbital Visibility = 0
Overhead
GS Acq
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec