15330 - The Emergence of Star Clusters

Cycle: 25, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

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VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) NGC-0300	WFC3/IR	2	02-Aug-2018 17:41:30.0	yes
02	(2) NGC-1313-W	WFC3/IR	2	02-Aug-2018 17:41:32.0	yes
03	(3) NGC-1313-E	WFC3/IR	2	02-Aug-2018 17:41:34.0	yes
04	(4) NGC-3738	WFC3/IR	2	02-Aug-2018 17:41:36.0	yes
05	(11) NGC-4449-2	WFC3/IR	2	02-Aug-2018 17:41:38.0	yes
06	(6) NGC5457-C	WFC3/IR	2	02-Aug-2018 17:41:39.0	yes
07	(7) NGC5457-SE	WFC3/IR	2	02-Aug-2018 17:41:42.0	yes
08	(8) NGC-7793-E	WFC3/IR	2	02-Aug-2018 17:41:45.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
09	(9) NGC-7793-W	WFC3/IR	2	02-Aug-2018 17:41:46.0	yes
10	(10) NGC-300-OPT	WFC3/UVIS	1	02-Aug-2018 17:41:47.0	yes

19 Total Orbits Used

ABSTRACT

We propose to measure the timescale for the clearing of natal dust by young star clusters. We will augment existing archival UV-to-I imaging data with new WFC3/IR images at J, H, and Paschen-beta for a sample of six nearby star forming galaxies. Under the standard scenario that the clearing is performed by supernovae (> 3 Myr), simulations show that not enough ionizing photons can escape galaxies and reionize the Universe at z>6. However, the actual clearing timescale is poorly established. We will obtain accurate ages and extinctions for the embedded and emergent young clusters in our target galaxies, in order to: (1) determine whether dust clearing occurs before or after 3 Myr, (2) investigate environmental dependencies for the timescale, and (3) establish the principal mechanisms for enabling the escape of ionizing photons from galaxies. Our project provides the physical footing for future JWST observations aimed at determining the sources of reionization of the Universe. The combination of archival and new images will also equip the community with a lasting legacy of homogeneous UV-to-IR coverage for a sample of nearby galaxies.

OBSERVING DESCRIPTION

1. The Sample

The sample is chosen primarily with the following criteria: (1) distance range between 2 Mpc and 7 Mpc, as a compromise between maximizing spatial resolution with WFC3/IR and spatial coverage of each galaxy; (2) inclination <50 degrees to minimize line-of-sight confusion; (3) Galactic latitude >20 degrees, to control effects of Milky Way extinction; (4) availability of ancillary data, specifically GALEX FUV and NUV and Spitzer 8-160 micron imaging; (5) availability of HST WFC3/UVIS and/or ACS archival imaging, covering at least from NUV to I band, including H-alpha, to leverage existing data. For our distance range, the spatial resolution of the WFC3/IR channel will be between 2 pc and 7.5 pc, i.e., sufficient to separate star clusters, which have uniform effective radii ~3 pc, and their ionized gas emission from surrounding contaminants. At the same time, a sizable portion of each galaxy, between 1.3 kpc and 4.4 kpc, will be observed. These requirements yield a sample of six galaxies, sufficient to accumulate statistics on young star clusters, and for which we request additional observations with WFC3/IR to achieve the age/extinction accuracies necessary for this project.

2. Proposed Observations

The six galaxies in our sample have archival images with WFC3/UVIS and/or ACS/WFC in NUV (F275W), U (F336W), B (F438W or F439W), V (F555W or F547M or F550M), H-alpha (F657N or F658N), and I (F814W). The suite of filters is complete for five of the six galaxies in at least one pointing. A few of the galaxies (NGC1313, NGC5457, and NGC7793) have two or more pointings with complete filter coverage. The sixth galaxy, NGC300, does not have an H-alpha observation in the archive. We request one to complete the filter suite for this galaxy, but we will drop our request if the H-alpha of NGC300 is observed as part of other
programs in our proposed pointing. This galaxy has FUV observations with the ACS/SBC over multiple pointings (GO-13743), covering almost the same footprint as a WFC3 field-of-view. We will use the FUV data to extend our SED modeling. Presence of emission lines in the broad F555W and F814W filters will be modeled via theoretical SEDs that include such lines; furthermore, we expect relatively little contamination, as the line emission is usually more extended than the clusters.
We request WFC3/IR observations for all six galaxies in the filters centered at: J (F110W), H (F160W), and P-beta (F128N), in order to extend the SEDs into the IR. We will *match as closely as possible* existing footprints from the WFC3/UVIS and/or ACS/WFC that are targeting areas of high dust emission, as inferred from the Spitzer 24 micron maps. For galaxies with multiple pointings in the archive (see above), we request to observe two fields in the IR, in order to increase the number statistics. This will also compensate for the smaller IR field-of-view relative to those of the optical cameras (about 50% smaller).

3. Exposure Times and Orbit Request
Rescaling from NGC5253 (Calzetti et al. 2015), the P emission of a 5 Myr old, 1,000 M_sun star cluster with AV =3 mag extinction at a distance of 6 Mpc is expected to have a surface brightness of 2x10-16 erg/s/cm2/arcsec2. From the WFC3/IR ETC, this surface brightness is observed in the F128N filter with S/N>=10 in 3x3 pixel bins with an exposure time of 2,200 seconds, divided into 3 dither patterns (to remove CRs). The same cluster is observable in F110W with S/N=20 in t=900 seconds, and in F160W in t=1,200 seconds. The higher S/N of the broad-band filters ensures that the subtraction of the stellar
continuum from the narrow-band filter will not dominate the noise budget. For NGC300 (2 Mpc), we request 1,500 seconds exposure in WFC3/UVIS F657N to detect the H-alpha emission from a cluster as specified above. When including overheads for guide star acquisition and reacquisition, small angle ma-
neuvers, filter change and (for NGC300) camera change, etc., we obtain that the IR obser-
vations require 2 orbits per pointing per galaxy (1 orbit in P-beta and one orbit in J+H), for a
total of 18 orbits for 9 pointings. One additional orbit is allocated for the H-alpha observation
of NGC300.

Visit

Proposal 15330, Visit 01, completed Thu Aug 02 21:41:48 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ORIENT 43D TO 53 D; ORIENT 223D TO 233 D

Fixed Targets

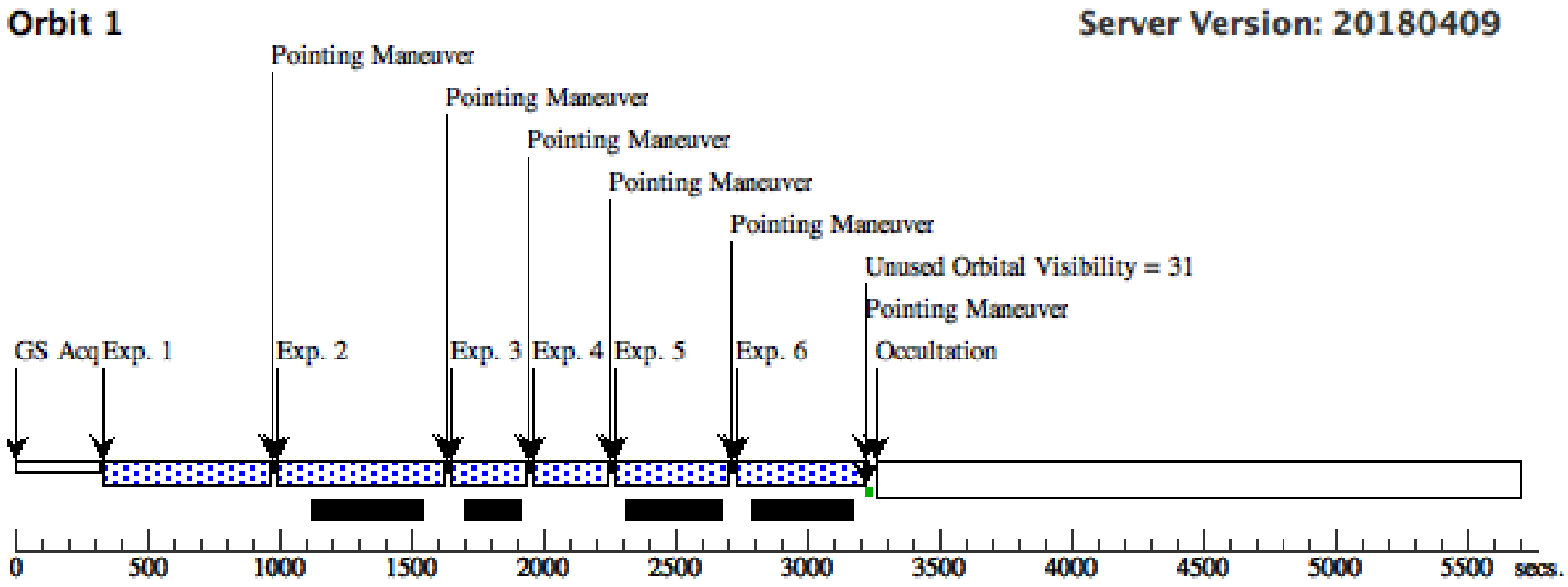
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	NGC-0300	RA: 00 54 50.6935 (13.7112229d) Dec: -37 38 58.33 (-37.64954d) Equinox: J2000		V=8.95	Reference Frame: ICRS

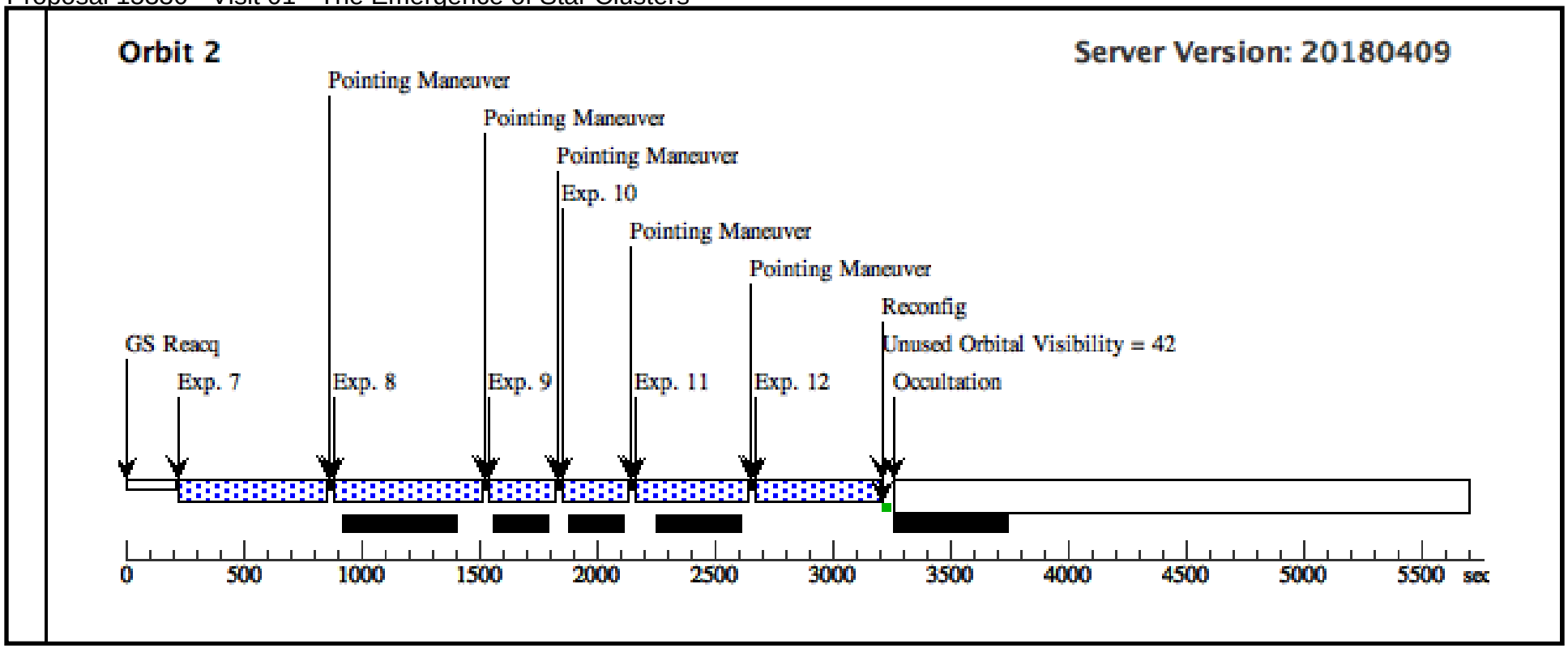
Comments: Matched to existing HST/WFC3 observations
Category=GALAXY
Description=[SPIRAL, SPIRAL ARM]
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) NGC-0300	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=12			599.232292 Secs (599.232 Secs) *[==>]*	***[1]***
2		(1) NGC-0300	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=12	POS TARG 0.542,0.182		599.232292 Secs (599.232 Secs) *[==>]*	***[1]***
3		(1) NGC-0300	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10			249.23203 Secs (249.232 Secs) *[==>]*	***[1]***
4		(1) NGC-0300	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG 0.542,0.182		249.23203 Secs (249.232 Secs) *[==>]*	***[1]***
5		(1) NGC-0300	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=13			399.233383 Secs (399.233 Secs) *[==>]*	***[1]***
6		(1) NGC-0300	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=14	POS TARG 0.542,0.182		449.233834 Secs (449.234 Secs) *[==>]*	***[1]***
7		(1) NGC-0300	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=12	POS TARG 0.339,0.485		599.232292 Secs (599.232 Secs) *[==>]*	***[2]***
8		(1) NGC-0300	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=12	POS TARG -0.203,0.303		599.232292 Secs (599.232 Secs) *[==>]*	***[2]***
9		(1) NGC-0300	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG 0.339,0.485		249.23203 Secs (249.232 Secs) *[==>]*	***[2]***
10		(1) NGC-0300	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG -0.203,0.303		249.23203 Secs (249.232 Secs) *[==>]*	***[2]***
11		(1) NGC-0300	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=14	POS TARG 0.339,0.485		449.233834 Secs (449.234 Secs) *[==>]*	***[2]***
12		(1) NGC-0300	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=15	POS TARG -0.203,0.303		499.234285 Secs (499.234 Secs) *[==>]*	***[2]***

Orbit Structure




Orbit 2
Server Version: 20180409
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Exp. 10
Pointing Maneuver
Pointing Maneuver
Reconfig
GS Reacq
Unused Orbital Visibility = 42
Exp. 7
Exp. 8
Exp. 9
Exp. 11
Exp. 12
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15330, Visit 02, scheduling Thu Aug 02 21:41:48 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ORIENT 270D TO 285 D; ORIENT 90D TO 105 D

Fixed Targets

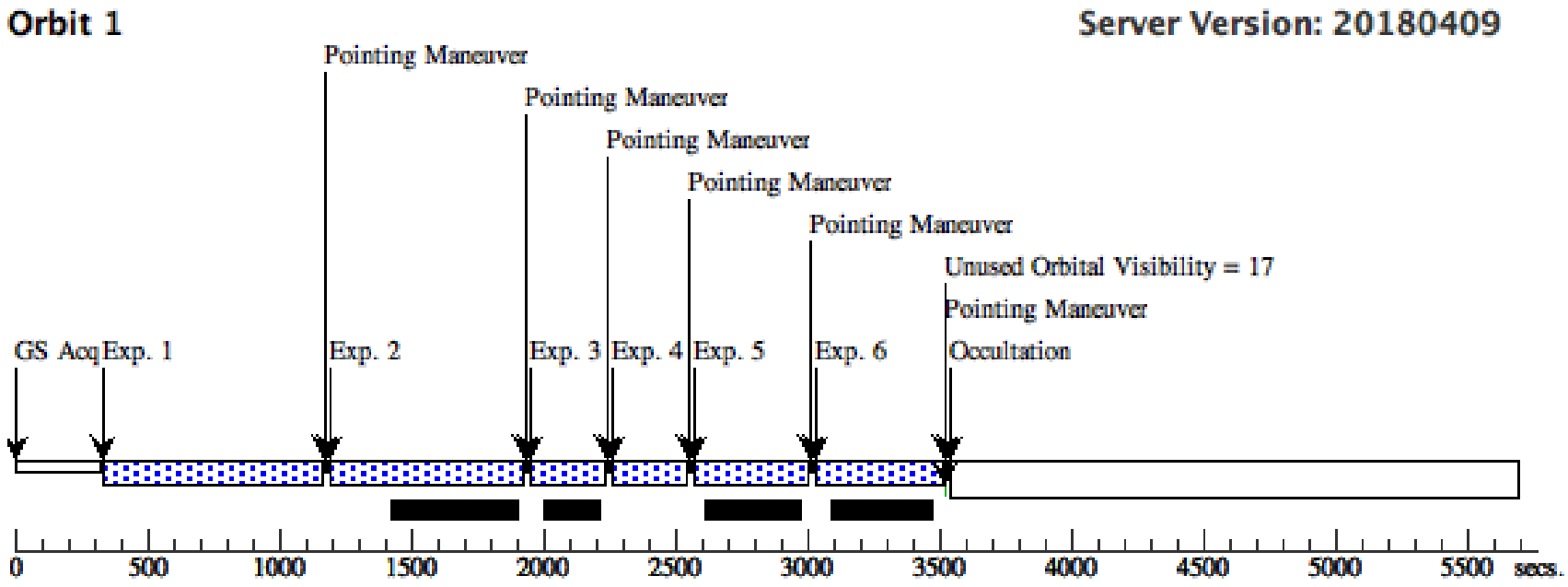
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	NGC-1313-W	RA: 03 18 10.4935 (49.5437229d) Dec: -66 30 5.97 (-66.50166d) Equinox: J2000		V=9.0	Reference Frame: ICRS

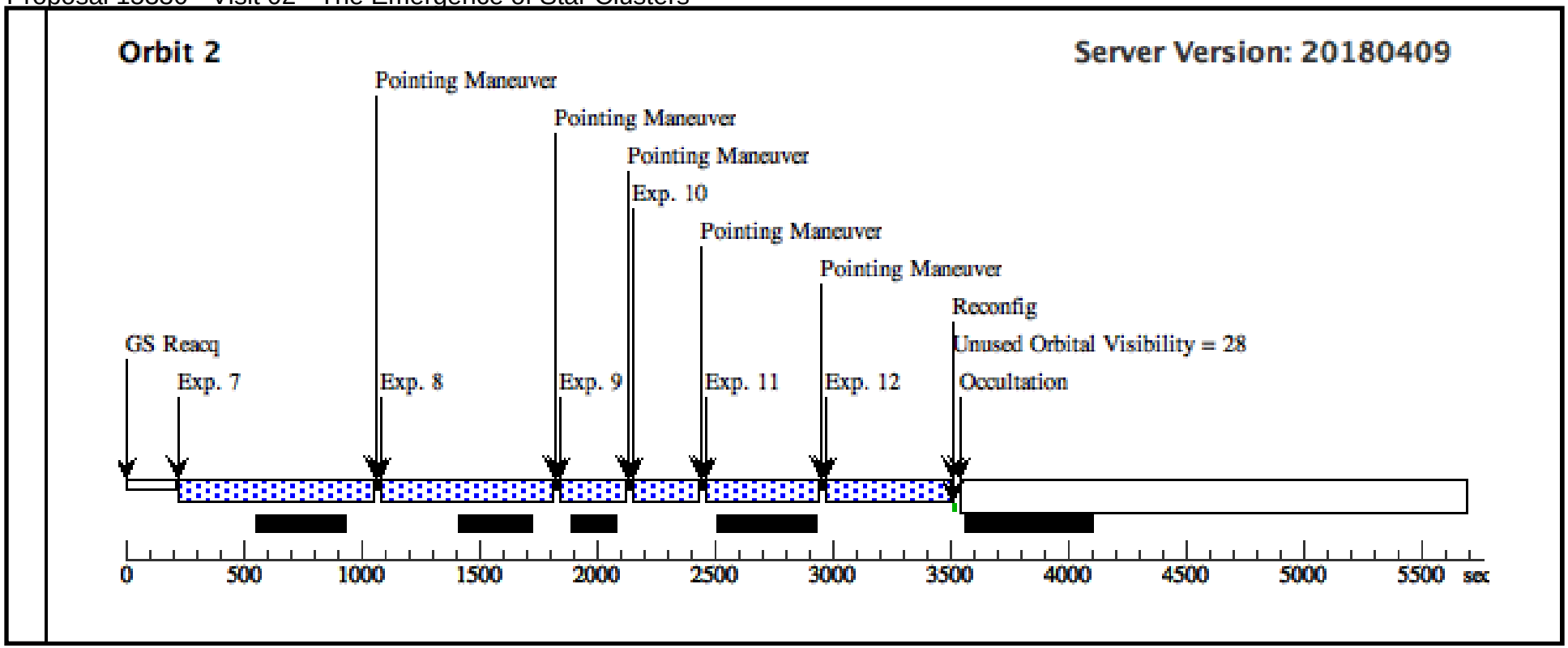
Comments: Matched to existing HST/WFC3 observations
Category=GALAXY
Description=[SPIRAL, STAR FORMING REGION]
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(2) NGC-1313-W	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=14			799.232938 Secs (799.233 Secs) *[==>]*	*[1]*
2		(2) NGC-1313-W	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=13	POS TARG 0.542,0.182		699.232615 Secs (699.233 Secs) *[==>]*	*[1]*
3		(2) NGC-1313-W	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10			249.23203 Secs (249.232 Secs) *[==>]*	*[1]*
4		(2) NGC-1313-W	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG 0.542,0.182		249.23203 Secs (249.232 Secs) *[==>]*	*[1]*
5		(2) NGC-1313-W	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=13			399.233383 Secs (399.233 Secs) *[==>]*	*[1]*
6		(2) NGC-1313-W	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=14	POS TARG 0.542,0.182		449.233834 Secs (449.234 Secs) *[==>]*	*[1]*
7		(2) NGC-1313-W	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=14	POS TARG 0.339,0.485		799.232938 Secs (799.233 Secs) *[==>]*	*[2]*
8		(2) NGC-1313-W	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=13	POS TARG -0.203,0.303		699.232615 Secs (699.233 Secs) *[==>]*	*[2]*
9		(2) NGC-1313-W	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG 0.339,0.485		249.23203 Secs (249.232 Secs) *[==>]*	*[2]*
10		(2) NGC-1313-W	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG -0.203,0.303		249.23203 Secs (249.232 Secs) *[==>]*	*[2]*
11		(2) NGC-1313-W	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=14	POS TARG 0.339,0.485		449.233834 Secs (449.234 Secs) *[==>]*	*[2]*
12		(2) NGC-1313-W	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=15	POS TARG -0.203,0.303		499.234285 Secs (499.234 Secs) *[==>]*	*[2]*

Orbit Structure




Orbit 2
Server Version: 20180409
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Exp. 10
Pointing Maneuver
Pointing Maneuver
Reconfig
GS Reacq
Unused Orbital Visibility = 28
Exp. 7
Exp. 8
Exp. 9
Exp. 11
Exp. 12
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15330, Visit 03, completed Thu Aug 02 21:41:48 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ORIENT 3D TO 13 D; ORIENT 183D TO 193 D

Fixed Targets

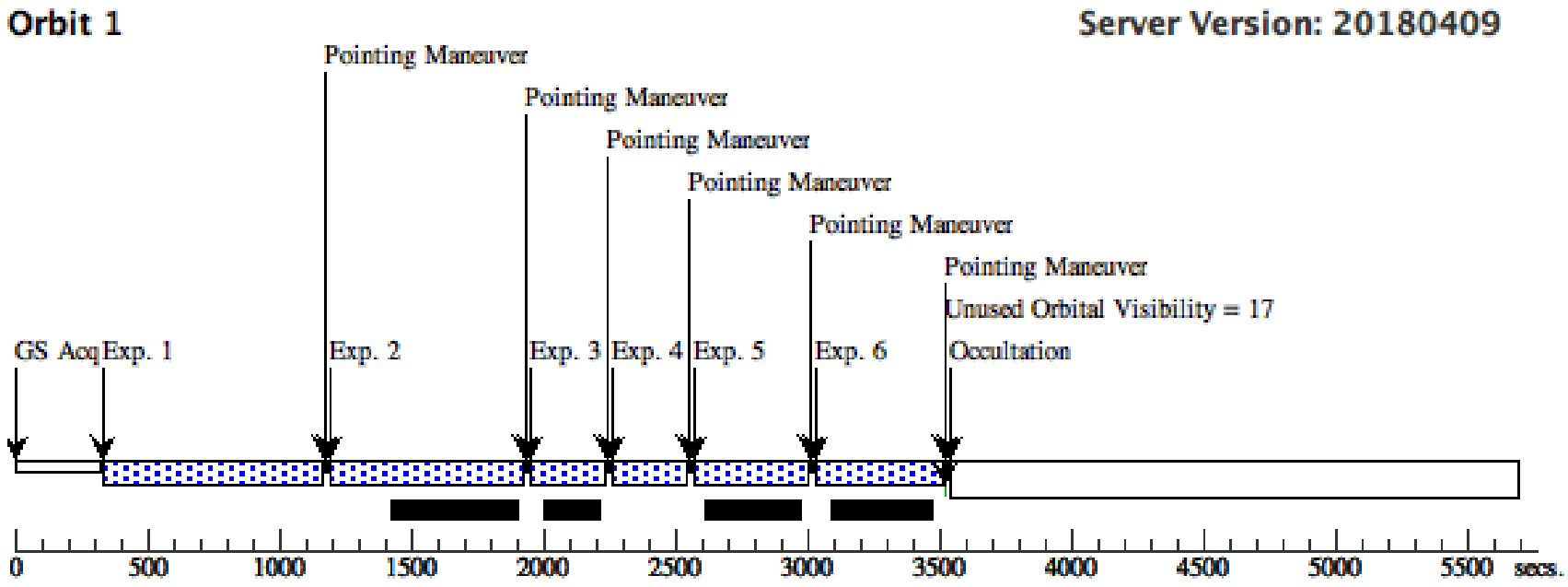
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	NGC-1313-E	RA: 03 18 27.9740 (49.6165583d) Dec: -66 28 54.43 (-66.48179d) Equinox: J2000		V=10.0	Reference Frame: ICRS

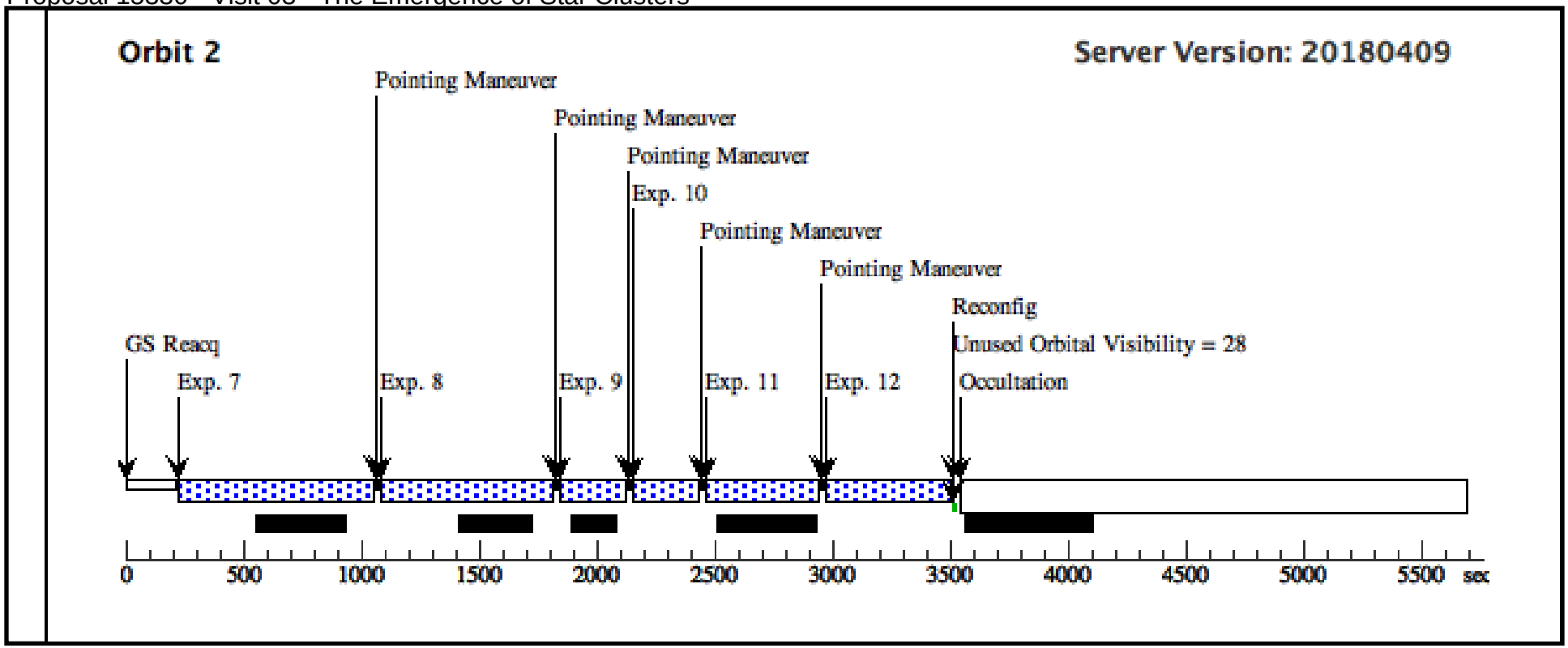
Comments: Matched to existing HST/WFC3 observations.
Category=GALAXY
Description=[SPIRAL, STAR FORMING REGION]
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(3) NGC-1313-E	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=14			799.232938 Secs (799.233 Secs) *[==>]*	*[1]*
2		(3) NGC-1313-E	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=13	POS TARG 0.542,0.182		699.232615 Secs (699.233 Secs) *[==>]*	*[1]*
3		(3) NGC-1313-E	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10			249.23203 Secs (249.232 Secs) *[==>]*	*[1]*
4		(3) NGC-1313-E	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG 0.542,0.182		249.23203 Secs (249.232 Secs) *[==>]*	*[1]*
5		(3) NGC-1313-E	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=13			399.233383 Secs (399.233 Secs) *[==>]*	*[1]*
6		(3) NGC-1313-E	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=14	POS TARG 0.542,0.182		449.233834 Secs (449.234 Secs) *[==>]*	*[1]*
7		(3) NGC-1313-E	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=14	POS TARG 0.339,0.485		799.232938 Secs (799.233 Secs) *[==>]*	*[2]*
8		(3) NGC-1313-E	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=13	POS TARG -0.203,0.303		699.232615 Secs (699.233 Secs) *[==>]*	*[2]*
9		(3) NGC-1313-E	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG 0.339,0.485		249.23203 Secs (249.232 Secs) *[==>]*	*[2]*
10		(3) NGC-1313-E	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG -0.203,0.303		249.23203 Secs (249.232 Secs) *[==>]*	*[2]*
11		(3) NGC-1313-E	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=14	POS TARG 0.339,0.485		449.233834 Secs (449.234 Secs) *[==>]*	*[2]*
12		(3) NGC-1313-E	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=15	POS TARG -0.203,0.303		499.234285 Secs (499.234 Secs) *[==>]*	*[2]*

Orbit Structure




Orbit 2
Server Version: 20180409
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Exp. 10
Pointing Maneuver
Pointing Maneuver
Reconfig
GS Reacq
Unused Orbital Visibility = 28
Exp. 7
Exp. 8
Exp. 9
Exp. 11
Exp. 12
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15330, Visit 04, completed Thu Aug 02 21:41:48 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: (none)

Fixed Targets

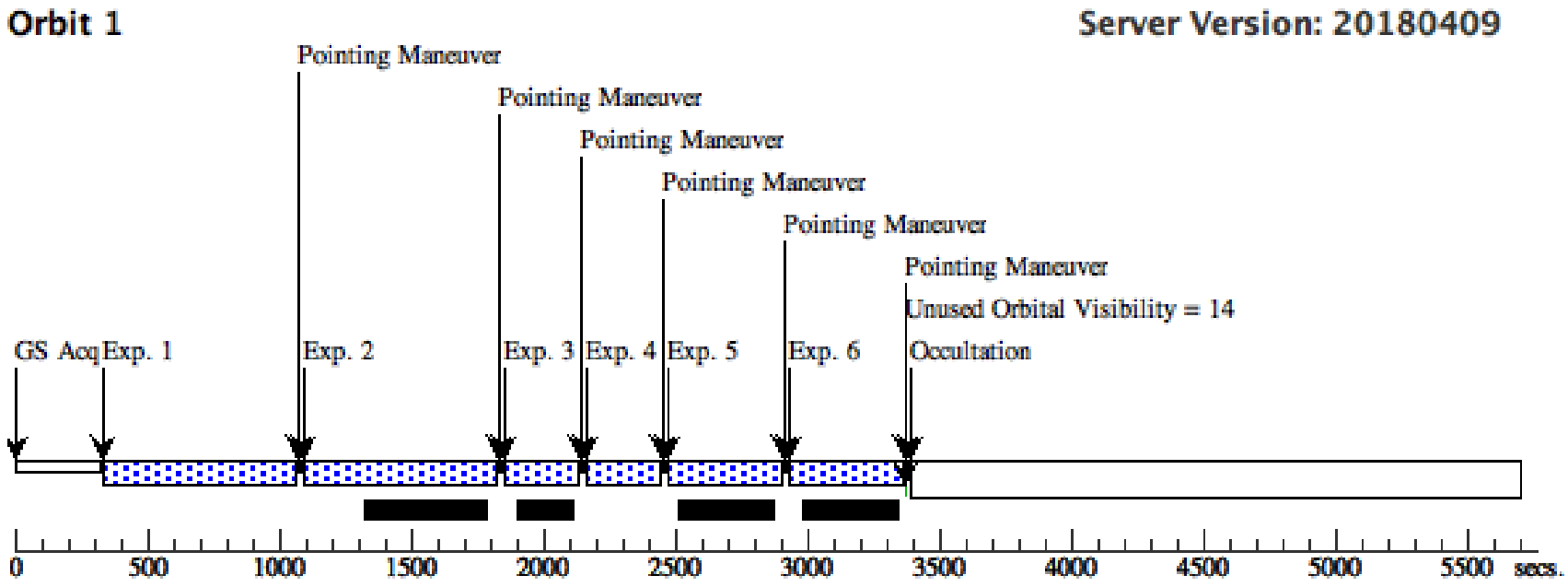
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	NGC-3738	RA: 11 35 48.2047 (173.9508529d) Dec: +54 31 25.41 (54.52372d) Equinox: J2000		V=12.04	Reference Frame: ICRS

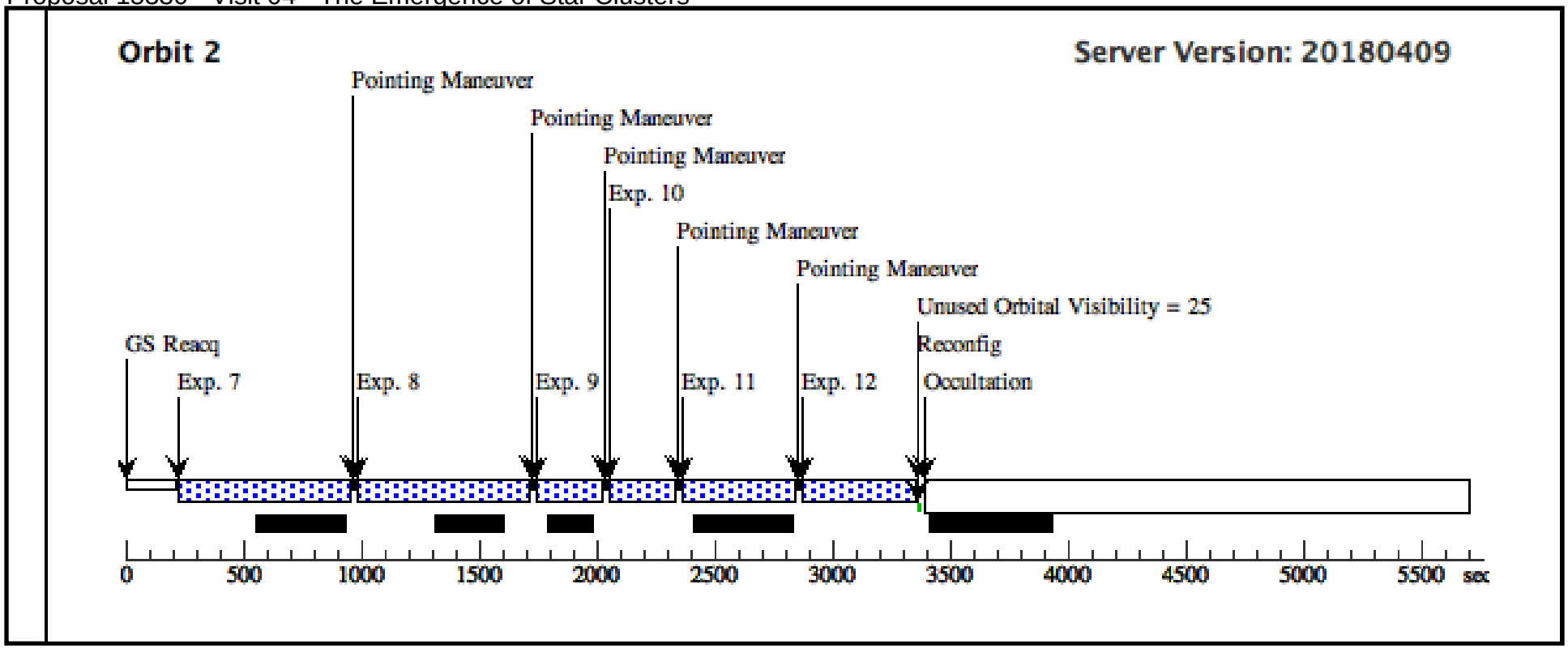
Comments: Matched to existing HST/WFC3 observations.
Category=GALAXY
Description=[MAGELLANIC IRREGULAR]
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(4) NGC-3738	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=13			699.232615 Secs (699.233 Secs) *[==>]*	*[1]*
2		(4) NGC-3738	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=13	POS TARG 0.542,0.182		699.232615 Secs (699.233 Secs) *[==>]*	*[1]*
3		(4) NGC-3738	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10			249.23203 Secs (249.232 Secs) *[==>]*	*[1]*
4		(4) NGC-3738	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG 0.542,0.182		249.23203 Secs (249.232 Secs) *[==>]*	*[1]*
5		(4) NGC-3738	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=13			399.233383 Secs (399.233 Secs) *[==>]*	*[1]*
6		(4) NGC-3738	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=13	POS TARG 0.542,0.182		399.233383 Secs (399.233 Secs) *[==>]*	*[1]*
7		(4) NGC-3738	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=13	POS TARG 0.339,0.485		699.232615 Secs (699.233 Secs) *[==>]*	*[2]*
8		(4) NGC-3738	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=13	POS TARG -0.203,0.303		699.232615 Secs (699.233 Secs) *[==>]*	*[2]*
9		(4) NGC-3738	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG 0.339,0.485		249.23203 Secs (249.232 Secs) *[==>]*	*[2]*
10		(4) NGC-3738	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG -0.203,0.303		249.23203 Secs (249.232 Secs) *[==>]*	*[2]*
11		(4) NGC-3738	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=14	POS TARG 0.339,0.485		449.233834 Secs (449.234 Secs) *[==>]*	*[2]*
12		(4) NGC-3738	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=14	POS TARG -0.203,0.303		449.233834 Secs (449.234 Secs) *[==>]*	*[2]*

Orbit Structure




Orbit 2
Server Version: 20180409
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Exp. 10
Pointing Maneuver
Pointing Maneuver
Unused Orbital Visibility = 25
GS Reacq
Reconfig
Exp. 7
Exp. 8
Exp. 9
Exp. 11
Exp. 12
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15330, Visit 05-2 (05) Thu Aug 02 21:41:48 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ORIENT 150D TO 168.4 D

Fixed Targets

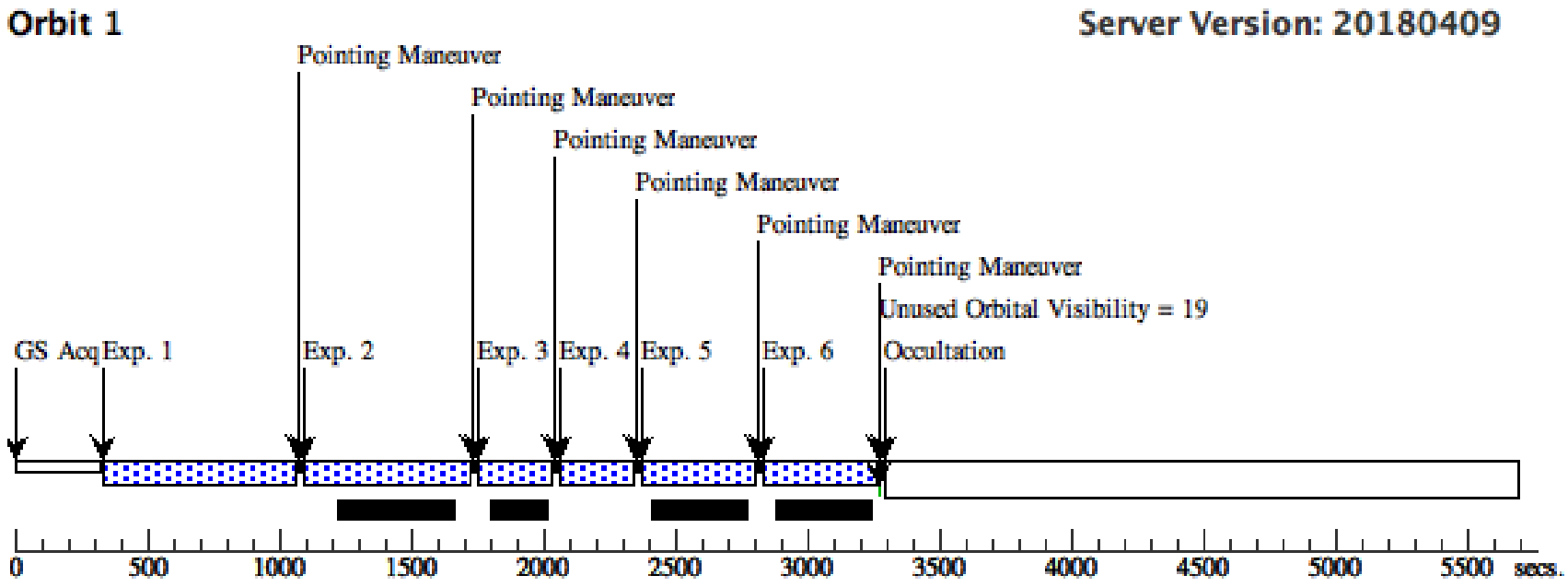
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(11)	NGC-4449-2	RA: 12 28 14.1149 (187.0588121d) Dec: +44 05 40.20 (44.09450d) Equinox: J2000		V=9.5	Reference Frame: ICRS

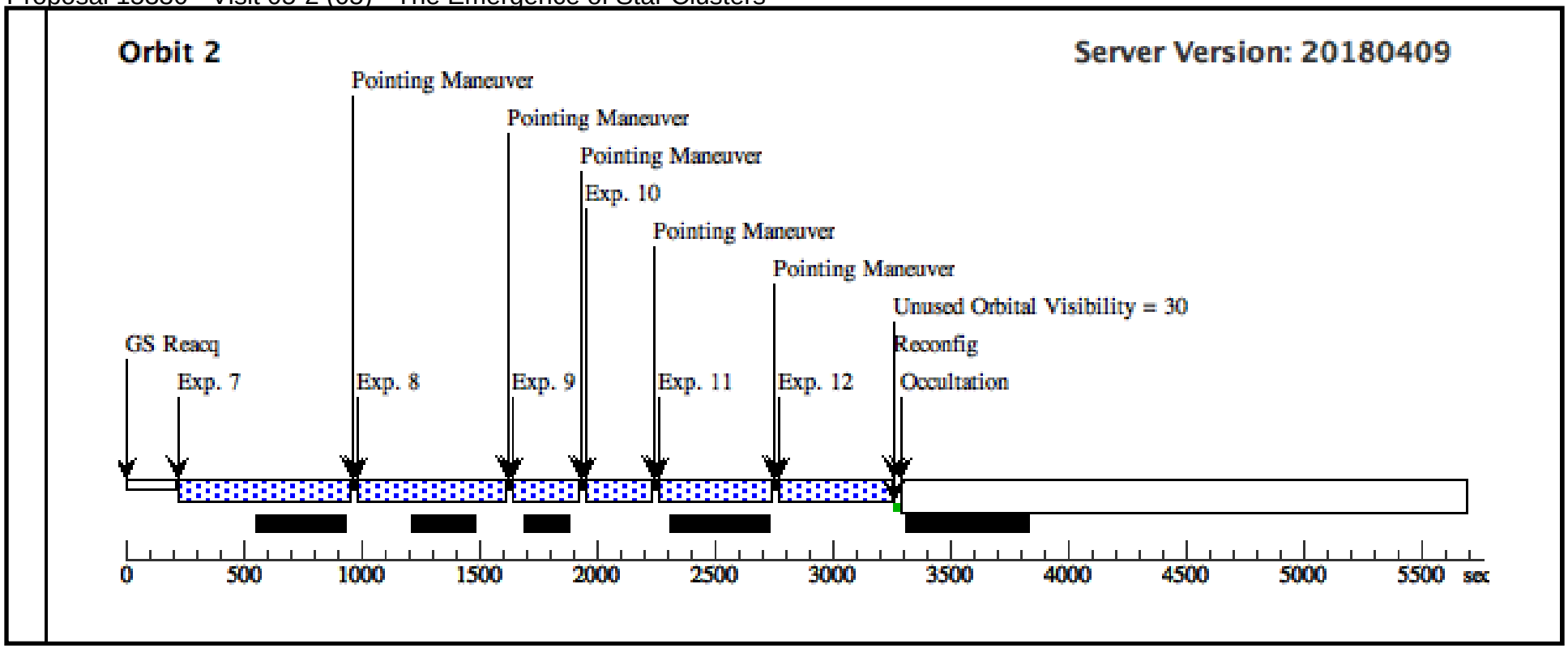
Comments: Matched to existing HST/WFC3 observations.
Category=GALAXY
Description=[MAGELLANIC IRREGULAR]
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(11) NGC-4449-2	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=13			699.232615 Secs (699.233 Secs) *[==>]*	*[1]*
2		(11) NGC-4449-2	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=12	POS TARG 0.542,0.182		599.232292 Secs (599.232 Secs) *[==>]*	*[1]*
3		(11) NGC-4449-2	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10			249.23203 Secs (249.232 Secs) *[==>]*	*[1]*
4		(11) NGC-4449-2	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG 0.542,0.182		249.23203 Secs (249.232 Secs) *[==>]*	*[1]*
5		(11) NGC-4449-2	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=13			399.233383 Secs (399.233 Secs) *[==>]*	*[1]*
6		(11) NGC-4449-2	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=13	POS TARG 0.542,0.182		399.233383 Secs (399.233 Secs) *[==>]*	*[1]*
7		(11) NGC-4449-2	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=13	POS TARG 0.339,0.485		699.232615 Secs (699.233 Secs) *[==>]*	*[2]*
8		(11) NGC-4449-2	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=12	POS TARG -0.203,0.303		599.232292 Secs (599.232 Secs) *[==>]*	*[2]*
9		(11) NGC-4449-2	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG 0.339,0.485		249.23203 Secs (249.232 Secs) *[==>]*	*[2]*
10		(11) NGC-4449-2	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG -0.203,0.303		249.23203 Secs (249.232 Secs) *[==>]*	*[2]*
11		(11) NGC-4449-2	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=14	POS TARG 0.339,0.485		449.233834 Secs (449.234 Secs) *[==>]*	*[2]*
12		(11) NGC-4449-2	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=14	POS TARG -0.203,0.303		449.233834 Secs (449.234 Secs) *[==>]*	*[2]*

Orbit Structure




Orbit 2
Server Version: 20180409
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Exp. 10
Pointing Maneuver
Pointing Maneuver
Unused Orbital Visibility = 30
GS Reacq
Reconfig
Exp. 7
Exp. 8
Exp. 9
Exp. 11
Exp. 12
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15330, Visit 06, scheduling Thu Aug 02 21:41:49 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ORIENT 0D TO 10 D; ORIENT 180D TO 190 D

Fixed Targets

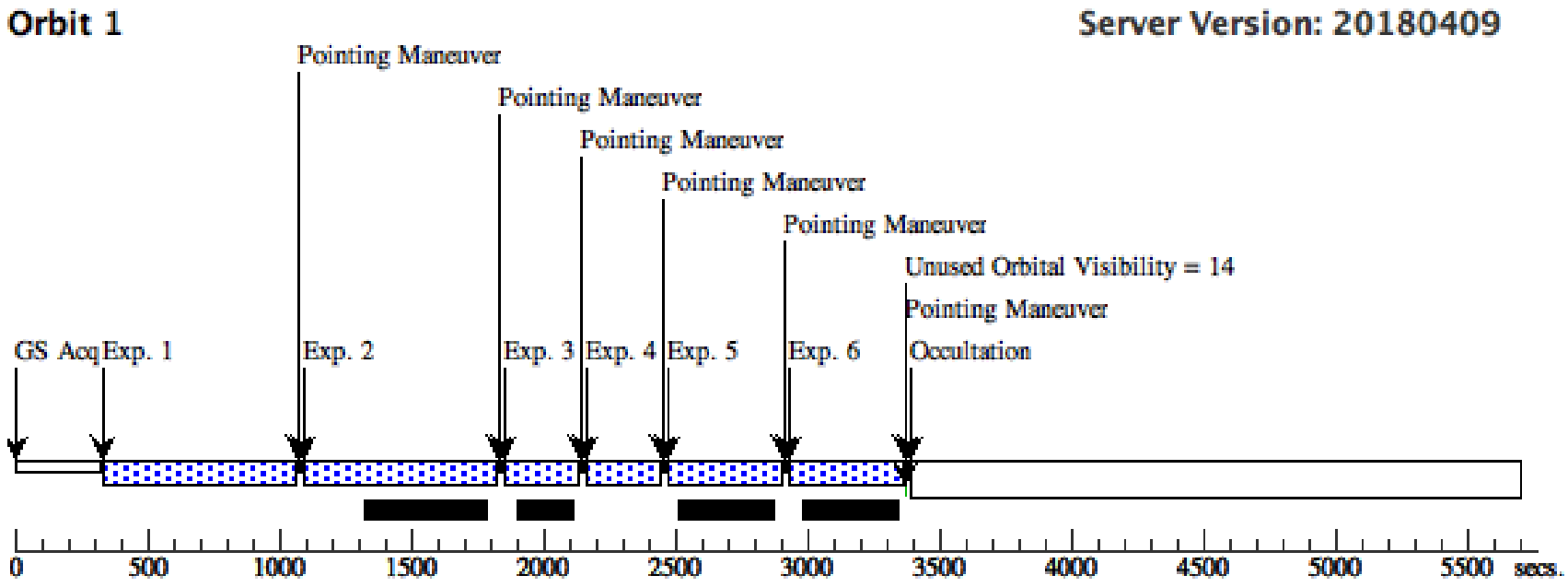
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(6)	NGC5457-C	RA: 14 03 8.1084 (210.7837850d) Dec: +54 21 0.22 (54.35006d) Equinox: J2000		V=7.86	Reference Frame: SIMBAD

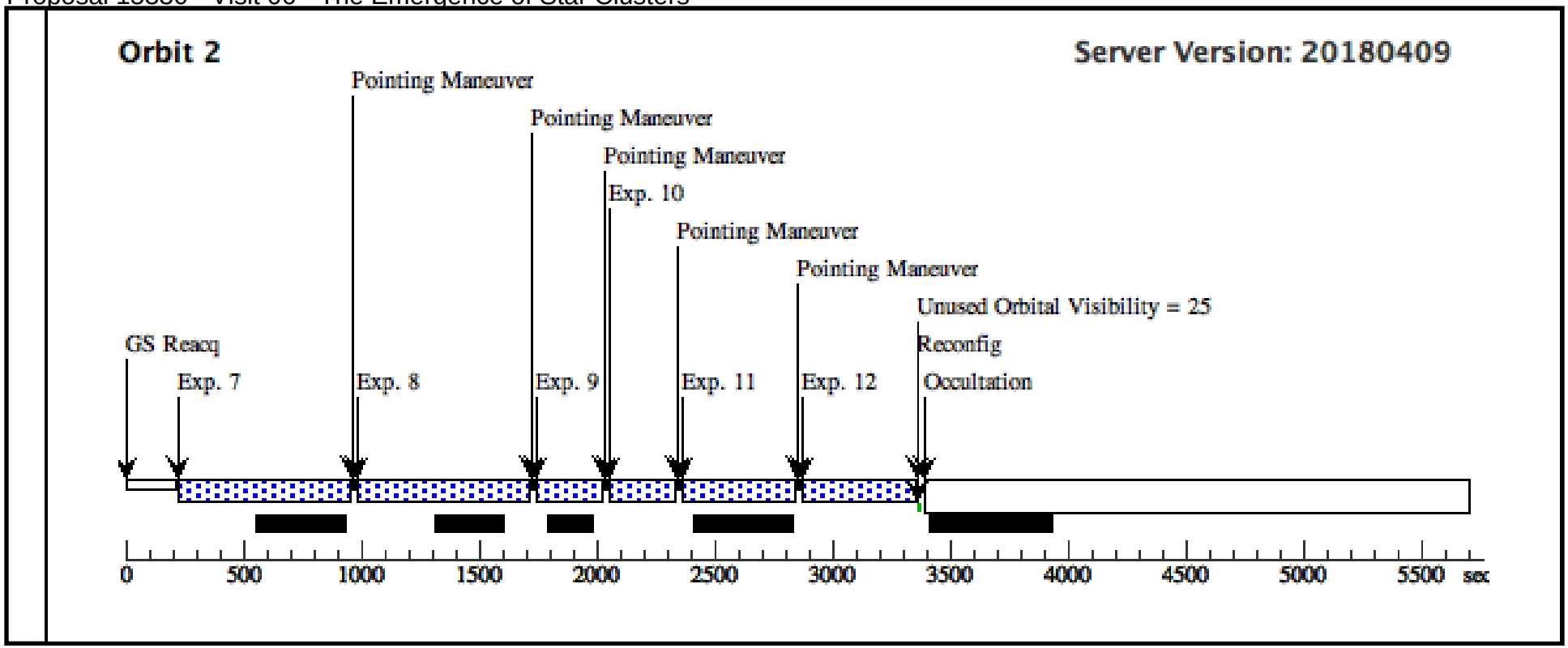
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=GALAXY
Description=[SPIRAL, STAR FORMING REGION]
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(6) NGC5457-C	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=13			699.232615 Secs (699.233 Secs) *[==>]*	*[1]*
2		(6) NGC5457-C	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=13	POS TARG 0.542,0.182		699.232615 Secs (699.233 Secs) *[==>]*	*[1]*
3		(6) NGC5457-C	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10			249.23203 Secs (249.232 Secs) *[==>]*	*[1]*
4		(6) NGC5457-C	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG 0.542,0.182		249.23203 Secs (249.232 Secs) *[==>]*	*[1]*
5		(6) NGC5457-C	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=13			399.233383 Secs (399.233 Secs) *[==>]*	*[1]*
6		(6) NGC5457-C	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=13	POS TARG 0.542,0.182		399.233383 Secs (399.233 Secs) *[==>]*	*[1]*
7		(6) NGC5457-C	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=13	POS TARG 0.339,0.485		699.232615 Secs (699.233 Secs) *[==>]*	*[2]*
8		(6) NGC5457-C	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=13	POS TARG -0.203,0.303		699.232615 Secs (699.233 Secs) *[==>]*	*[2]*
9		(6) NGC5457-C	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG 0.339,0.485		249.23203 Secs (249.232 Secs) *[==>]*	*[2]*
10		(6) NGC5457-C	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG -0.203,0.303		249.23203 Secs (249.232 Secs) *[==>]*	*[2]*
11		(6) NGC5457-C	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=14	POS TARG 0.339,0.485		449.233834 Secs (449.234 Secs) *[==>]*	*[2]*
12		(6) NGC5457-C	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=14	POS TARG -0.203,0.303		449.233834 Secs (449.234 Secs) *[==>]*	*[2]*

Orbit Structure




Orbit 2
Server Version: 20180409
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Exp. 10
Pointing Maneuver
Pointing Maneuver
Unused Orbital Visibility = 25
GS Reacq
Reconfig
Exp. 7
Exp. 8
Exp. 9
Exp. 11
Exp. 12
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15330, Visit 07, scheduling Thu Aug 02 21:41:49 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ORIENT 355D TO 5 D; ORIENT 175D TO 185 D

Fixed Targets

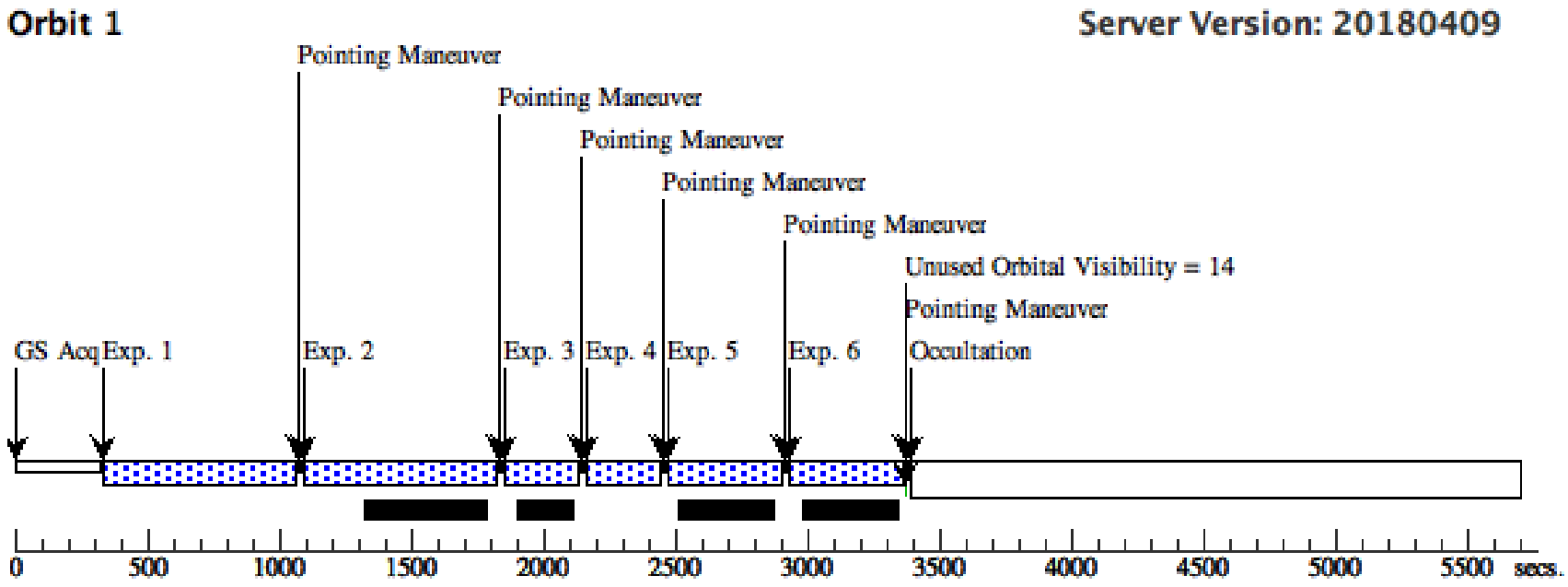
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(7)	NGC5457-SE	RA: 14 03 19.7783 (210.8324096d) Dec: +54 18 52.75 (54.31465d) Equinox: J2000		V=7.5	Reference Frame: NED

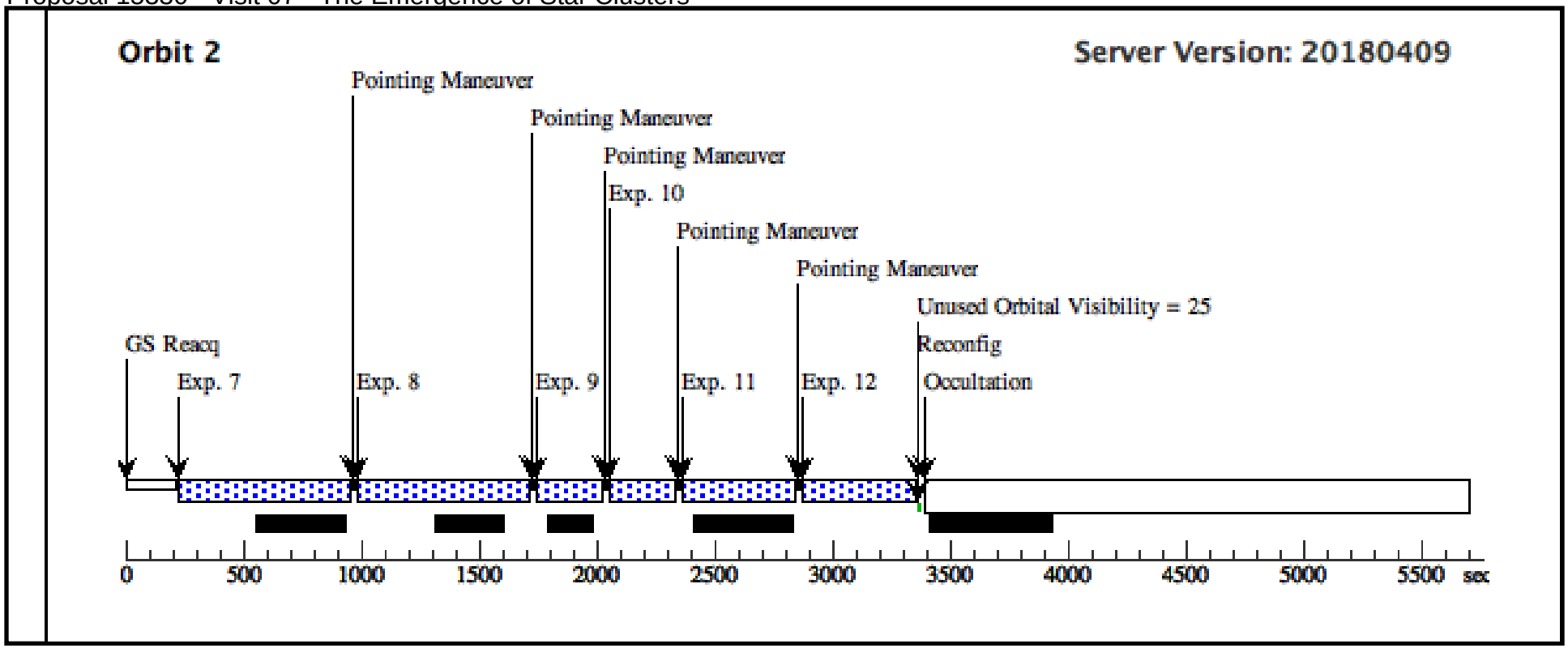
Comments: This object was generated by the targetselector and retrieved from the NED database.
Category=GALAXY
Description=[SPIRAL, SPIRAL ARM]
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(7) NGC5457-SE	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=13			699.232615 Secs (699.233 Secs) *[==>]*	*[1]*
2		(7) NGC5457-SE	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=13	POS TARG 0.542,0.182		699.232615 Secs (699.233 Secs) *[==>]*	*[1]*
3		(7) NGC5457-SE	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10			249.23203 Secs (249.232 Secs) *[==>]*	*[1]*
4		(7) NGC5457-SE	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG 0.542,0.182		249.23203 Secs (249.232 Secs) *[==>]*	*[1]*
5		(7) NGC5457-SE	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=13			399.233383 Secs (399.233 Secs) *[==>]*	*[1]*
6		(7) NGC5457-SE	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=13	POS TARG 0.542,0.182		399.233383 Secs (399.233 Secs) *[==>]*	*[1]*
7		(7) NGC5457-SE	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=13	POS TARG 0.339,0.485		699.232615 Secs (699.233 Secs) *[==>]*	*[2]*
8		(7) NGC5457-SE	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=13	POS TARG -0.203,0.303		699.232615 Secs (699.233 Secs) *[==>]*	*[2]*
9		(7) NGC5457-SE	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG 0.339,0.485		249.23203 Secs (249.232 Secs) *[==>]*	*[2]*
10		(7) NGC5457-SE	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG -0.203,0.303		249.23203 Secs (249.232 Secs) *[==>]*	*[2]*
11		(7) NGC5457-SE	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=14	POS TARG 0.339,0.485		449.233834 Secs (449.234 Secs) *[==>]*	*[2]*
12		(7) NGC5457-SE	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=14	POS TARG -0.203,0.303		449.233834 Secs (449.234 Secs) *[==>]*	*[2]*

Orbit Structure




Orbit 2
Server Version: 20180409
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Exp. 10
Pointing Maneuver
Pointing Maneuver
Unused Orbital Visibility = 25
GS Reacq
Reconfig
Exp. 7
Exp. 8
Exp. 9
Exp. 11
Exp. 12
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15330, Visit 08, completed Thu Aug 02 21:41:49 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ORIENT 85D TO 95 D; ORIENT 265D TO 275 D

Fixed Targets

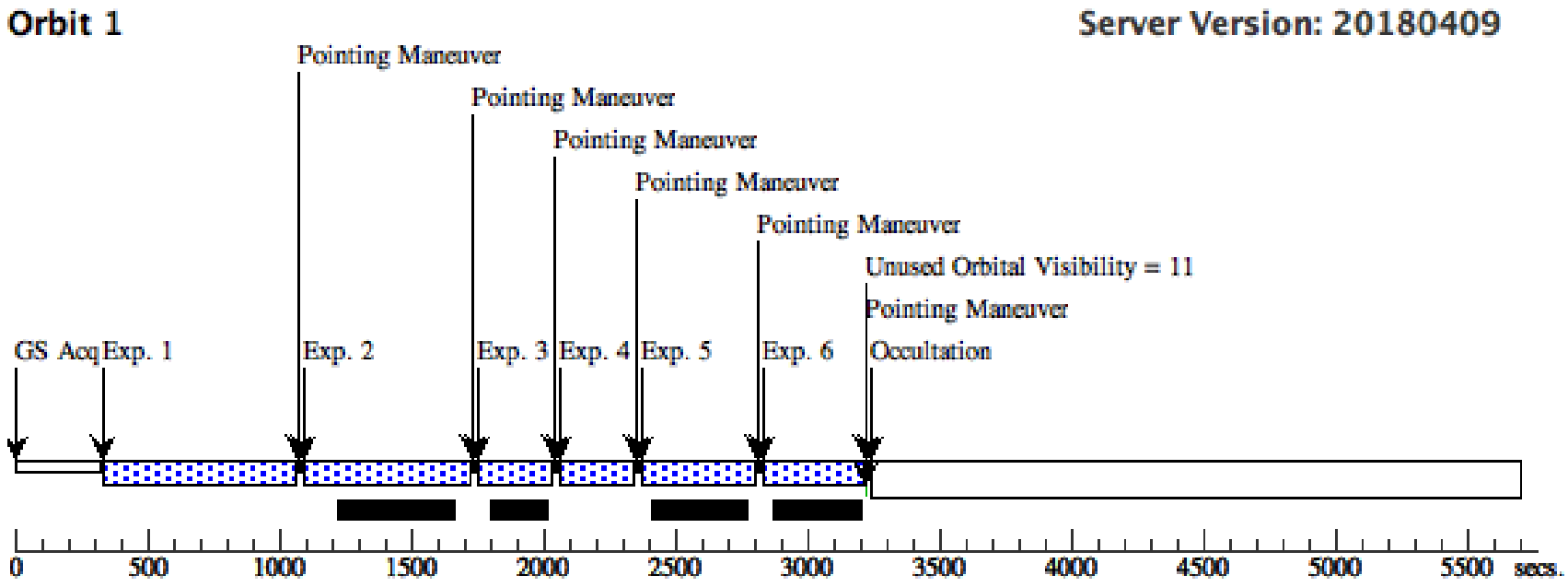
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(8)	NGC-7793-E	RA: 23 57 51.2649 (359.4636038d) Dec: -32 35 30.07 (-32.59169d) Equinox: J2000		V=11.0	Reference Frame: NED

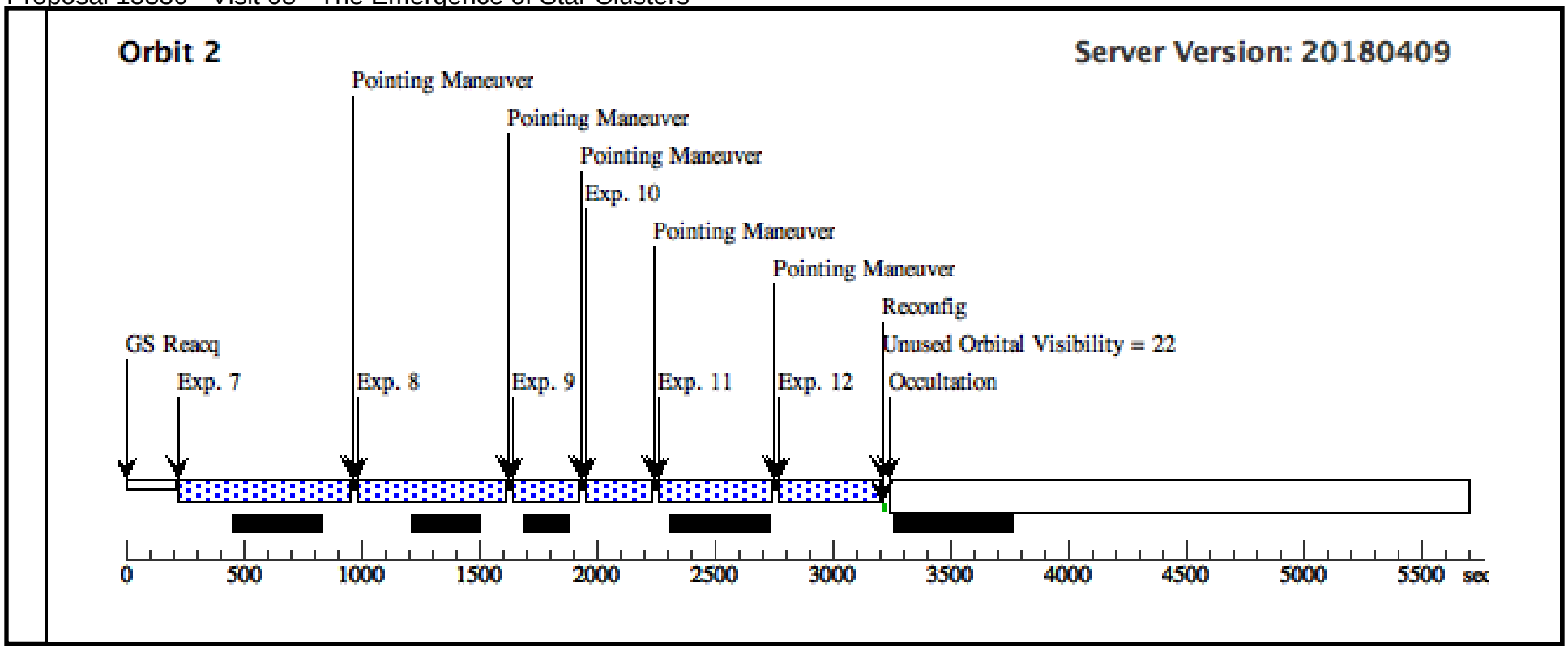
Comments: This object was generated by the targetselector and retrieved from the NED database.
Category=GALAXY
Description=[SPIRAL, SPIRAL ARM, STAR FORMING REGION]
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(8) NGC-7793-E	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=13			699.232615 Secs (699.233 Secs) *[==>]*	*[1]*
2		(8) NGC-7793-E	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=12	POS TARG 0.542,0.182		599.232292 Secs (599.232 Secs) *[==>]*	*[1]*
3		(8) NGC-7793-E	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10			249.23203 Secs (249.232 Secs) *[==>]*	*[1]*
4		(8) NGC-7793-E	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG 0.542,0.182		249.23203 Secs (249.232 Secs) *[==>]*	*[1]*
5		(8) NGC-7793-E	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=13			399.233383 Secs (399.233 Secs) *[==>]*	*[1]*
6		(8) NGC-7793-E	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=12	POS TARG 0.542,0.182		349.232932 Secs (349.233 Secs) *[==>]*	*[1]*
7		(8) NGC-7793-E	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=13	POS TARG 0.339,0.485		699.232615 Secs (699.233 Secs) *[==>]*	*[2]*
8		(8) NGC-7793-E	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=12	POS TARG -0.203,0.303		599.232292 Secs (599.232 Secs) *[==>]*	*[2]*
9		(8) NGC-7793-E	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG 0.339,0.485		249.23203 Secs (249.232 Secs) *[==>]*	*[2]*
10		(8) NGC-7793-E	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG -0.203,0.303		249.23203 Secs (249.232 Secs) *[==>]*	*[2]*
11		(8) NGC-7793-E	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=14	POS TARG 0.339,0.485		449.233834 Secs (449.234 Secs) *[==>]*	*[2]*
12		(8) NGC-7793-E	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=13	POS TARG -0.203,0.303		399.233383 Secs (399.233 Secs) *[==>]*	*[2]*

Orbit Structure




Orbit 2
Server Version: 20180409
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Exp. 10
Pointing Maneuver
Pointing Maneuver
Reconfig
GS Reacq
Unused Orbital Visibility = 22
Exp. 7
Exp. 8
Exp. 9
Exp. 11
Exp. 12
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15330, Visit 09, completed Thu Aug 02 21:41:49 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ORIENT 85D TO 95 D; ORIENT 265D TO 275 D

Fixed Targets

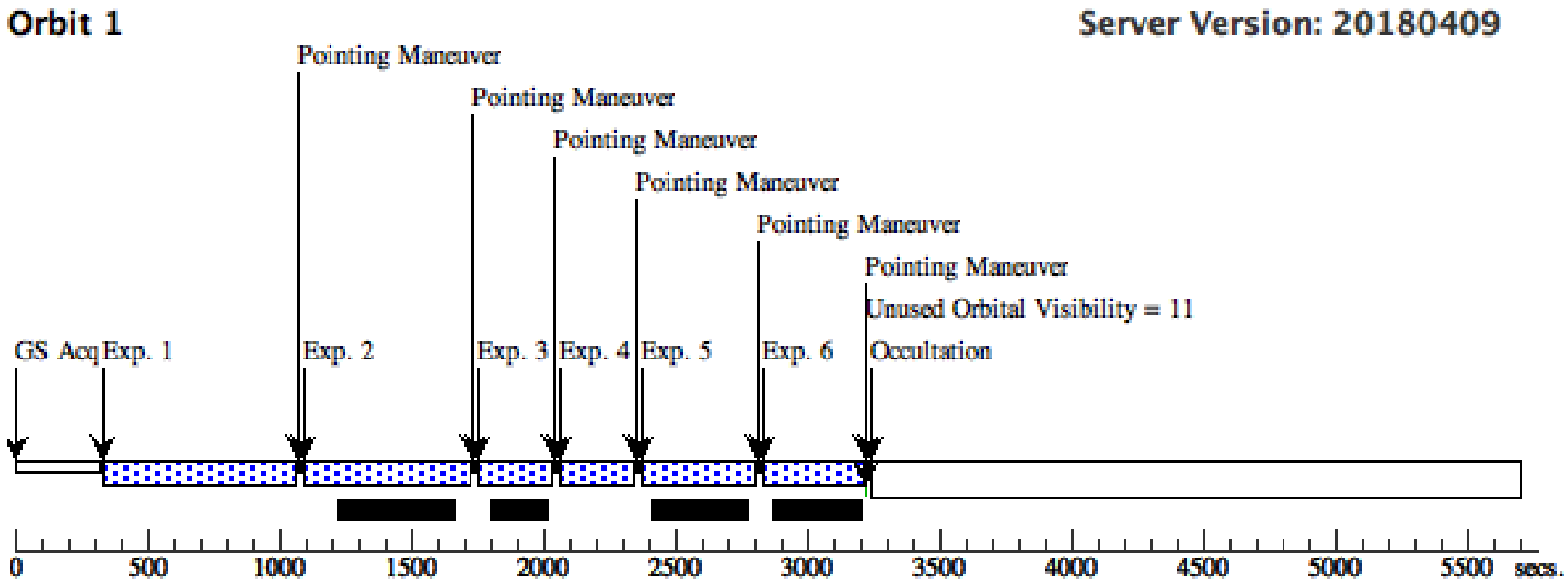
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(9)	NGC-7793-W	RA: 23 57 41.5534 (359.4231392d) Dec: -32 35 13.82 (-32.58717d) Equinox: J2000		V=11.0	Reference Frame: NED

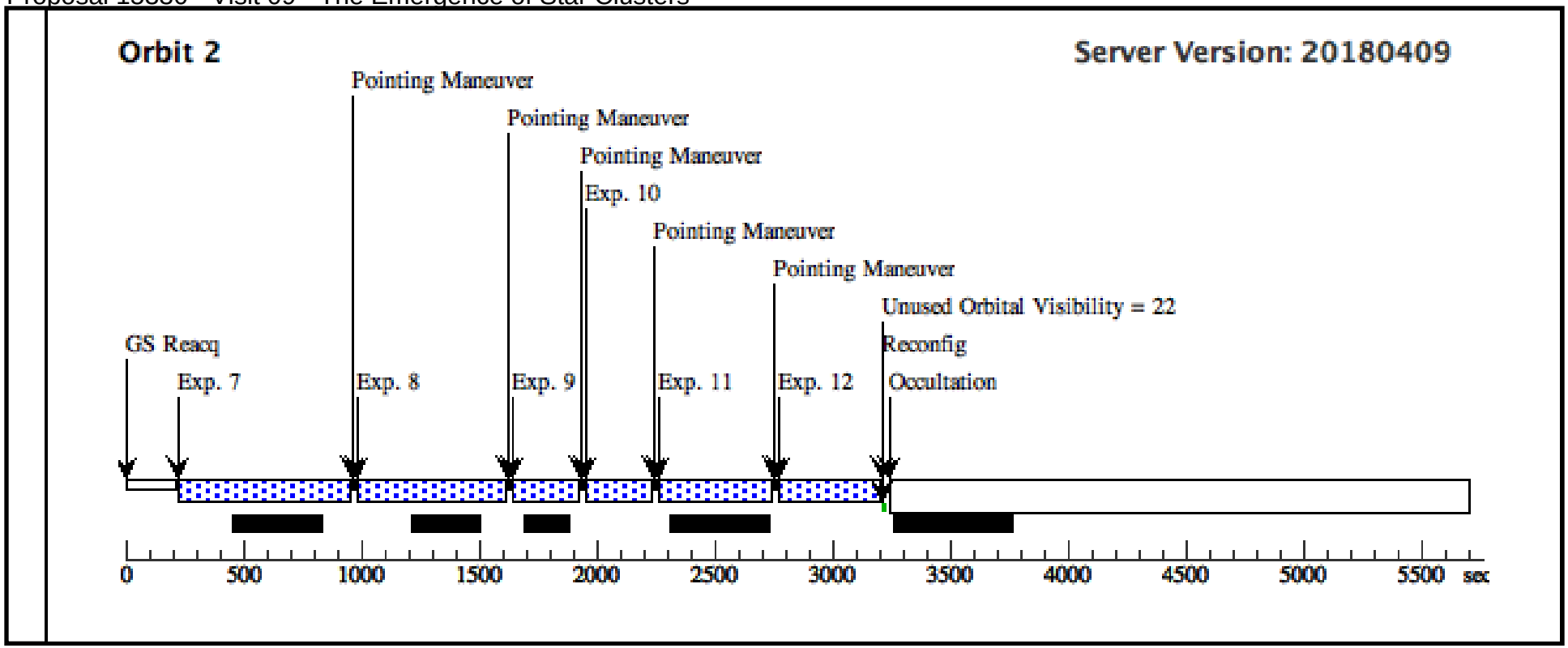
Comments: This object was generated by the targetselector and retrieved from the NED database.
Category=GALAXY
Description=[SPIRAL, SPIRAL ARM, STAR FORMING REGION]
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(9) NGC-7793-W	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=13			699.232615 Secs (699.233 Secs) *[==>]*	*[1]*
2		(9) NGC-7793-W	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=12	POS TARG 0.542,0.182		599.232292 Secs (599.232 Secs) *[==>]*	*[1]*
3		(9) NGC-7793-W	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10			249.23203 Secs (249.232 Secs) *[==>]*	*[1]*
4		(9) NGC-7793-W	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG 0.542,0.182		249.23203 Secs (249.232 Secs) *[==>]*	*[1]*
5		(9) NGC-7793-W	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=13			399.233383 Secs (399.233 Secs) *[==>]*	*[1]*
6		(9) NGC-7793-W	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=12	POS TARG 0.542,0.182		349.232932 Secs (349.233 Secs) *[==>]*	*[1]*
7		(9) NGC-7793-W	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=13	POS TARG 0.339,0.485		699.232615 Secs (699.233 Secs) *[==>]*	*[2]*
8		(9) NGC-7793-W	WFC3/IR, MULTIACCUM, IR-FIX	F128N	SAMP-SEQ=STEP100; NSAMP=12	POS TARG -0.203,0.303		599.232292 Secs (599.232 Secs) *[==>]*	*[2]*
9		(9) NGC-7793-W	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG 0.339,0.485		249.23203 Secs (249.232 Secs) *[==>]*	*[2]*
10		(9) NGC-7793-W	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=STEP50; NSAMP=10	POS TARG -0.203,0.303		249.23203 Secs (249.232 Secs) *[==>]*	*[2]*
11		(9) NGC-7793-W	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=14	POS TARG 0.339,0.485		449.233834 Secs (449.234 Secs) *[==>]*	*[2]*
12		(9) NGC-7793-W	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=STEP50; NSAMP=13	POS TARG -0.203,0.303		399.233383 Secs (399.233 Secs) *[==>]*	*[2]*

Orbit Structure




Orbit 2
Server Version: 20180409
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Exp. 10
Pointing Maneuver
Pointing Maneuver
Unused Orbital Visibility = 22
GS Reacq
Reconfig
Exp. 7
Exp. 8
Exp. 9
Exp. 11
Exp. 12
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15330, Visit 10, completed Thu Aug 02 21:41:49 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 42D TO 52 D; ORIENT 222D TO 232 D

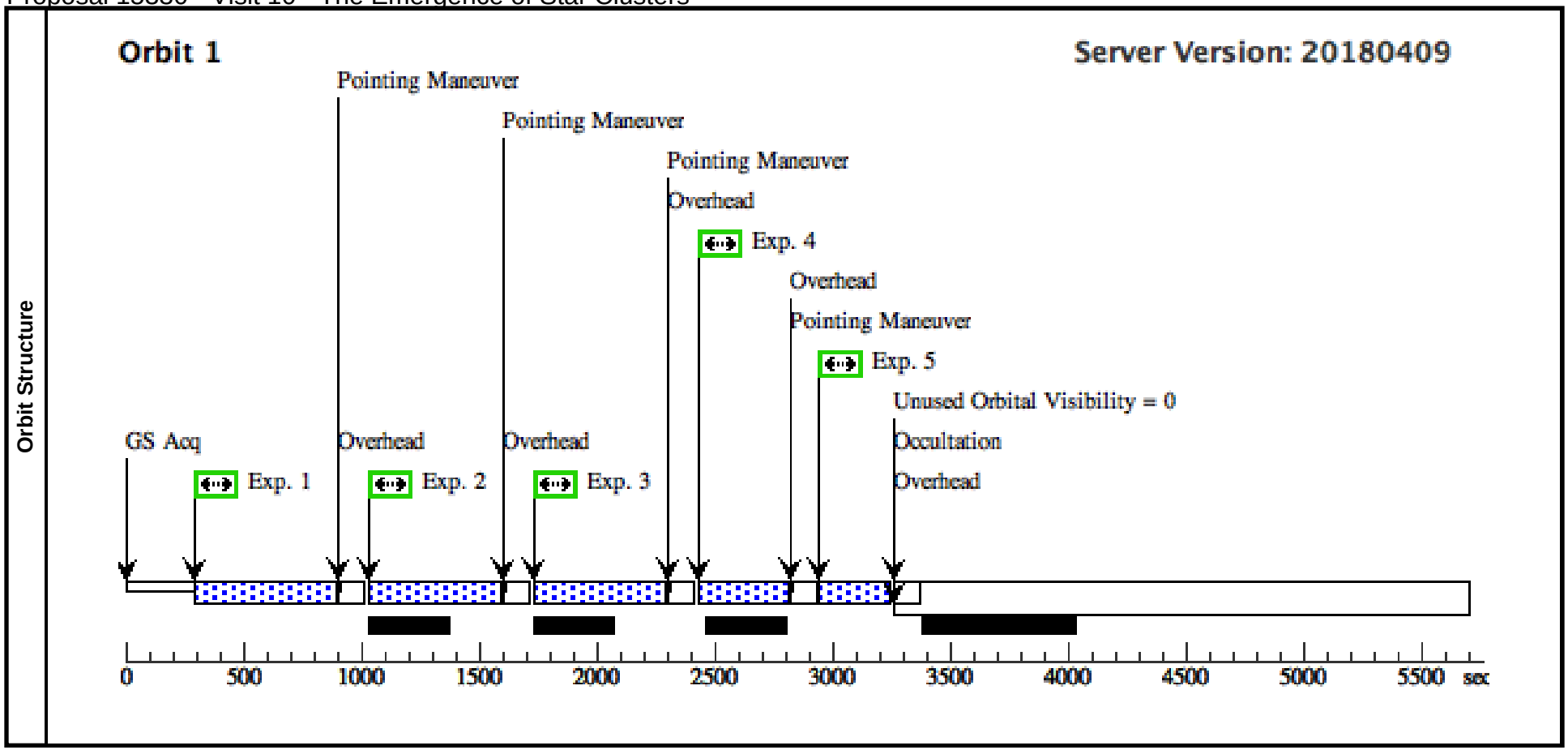
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(10)	NGC-300-OPT	RA: 00 54 52.6573 (13.7194054d) Dec: -37 38 47.29 (-37.64647d) Equinox: J2000		V=8.95	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[SPIRAL, SPIRAL ARM]
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(10) NGC-300-OPT	WFC3/UVIS, ACCUM, UVIS-CENTER	F657N	FLASH=12			566 Secs (566 Secs) *[==>]*	*[1]*
2		(10) NGC-300-OPT	WFC3/UVIS, ACCUM, UVIS-CENTER	F657N	FLASH=12	POS TARG 1.12,-1.52		566 Secs (566 Secs) *[==>]*	*[1]*
3		(10) NGC-300-OPT	WFC3/UVIS, ACCUM, UVIS-CENTER	F657N	FLASH=12	POS TARG 2.24,1.52		566 Secs (566 Secs) *[==>]*	*[1]*
4		(10) NGC-300-OPT	WFC3/UVIS, ACCUM, UVIS-CENTER	F547M	FLASH=7.0	POS TARG 0.0,-1.52		354 Secs (354 Secs) *[==>]*	*[1]*
5		(10) NGC-300-OPT	WFC3/UVIS, ACCUM, UVIS-CENTER	F547M	FLASH=9.0	POS TARG 2.24,1.52		303 Secs (303 Secs) *[==>]*	*[1]*


Orbit Structure
Orbit 1
Server Version: 20180409
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Overhead
Exp. 4
Overhead
Pointing Maneuver
Exp. 5
Unused Orbital Visibility = 0
Occultation
Overhead
GS Acq
Exp. 1
Overhead
Exp. 2
Overhead
Exp. 3
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec