15303 - Revealing the Environmental Dependence in Superluminous Supernovae Diversity

Cycle: 25, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

Name	*Institution*	*E-Mail*
Dr. Chris D'Andrea (PI) (Contact)	**University of Pennsylvania**	**cdandrea@sas.upenn.edu**
Prof. Masao Sako (CoI) (AdminUSPI)	University of Pennsylvania	masao@sas.upenn.edu
Dr. Mark Sullivan (CoI) (ESA Member)	University of Southampton	m.sullivan@soton.ac.uk
Dr. Mathew Smith (CoI) (ESA Member)	University of Southampton	mat.smith@soton.ac.uk

VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) DES15S2NR-HOST	WFC3/UVIS	1	23-Jan-2018 21:00:16.0	yes
02	(2) DES15C3HAV-HOST	WFC3/UVIS	1	23-Jan-2018 21:00:17.0	yes
03	(3) DES14C1RHG-HOST	WFC3/UVIS	2	23-Jan-2018 21:00:18.0	yes
04	(4) DES15S1NOG-HOST	WFC3/UVIS	1	23-Jan-2018 21:00:19.0	yes
05	(5) DES16C3DMP-HOST	WFC3/UVIS	1	23-Jan-2018 21:00:19.0	yes
06	(6) DES14X3TAZ-HOST	WFC3/UVIS	1	23-Jan-2018 21:00:20.0	yes
07	(7) DES13S2CMM-HOST	WFC3/UVIS	1	23-Jan-2018 21:00:21.0	yes
08	(8) DES16C3CV-HOST	WFC3/UVIS	2	23-Jan-2018 21:00:21.0	yes
09	(9) DES15X3HM-HOST	WFC3/UVIS	2	23-Jan-2018 21:00:22.0	yes
10	(10) DES14X2BYO-HOST	WFC3/UVIS	2	23-Jan-2018 21:00:23.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
11	(11) DES16C3GGU-HOST	WFC3/UVIS	1	23-Jan-2018 21:00:23.0	yes
12	(12) DES16C2AIX-HOST	WFC3/UVIS	1	23-Jan-2018 21:00:24.0	yes
13	(13) DES15X1NOE-HOST	WFC3/UVIS	1	23-Jan-2018 21:00:24.0	yes
14	(14) DES14C1FI-HOST	WFC3/UVIS	1	23-Jan-2018 21:00:25.0	yes
15	(15) DES14S2QRI-HOST	WFC3/UVIS	2	23-Jan-2018 21:00:25.0	yes
16	(16) DES15E2MLF-HOST	WFC3/UVIS	1	23-Jan-2018 21:00:26.0	yes
17	(17) DES16C2NM-HOST	WFC3/UVIS	1	23-Jan-2018 21:00:27.0	yes

22 Total Orbits Used

ABSTRACT

Superluminous Supernovae (SLSNe) are a rare, exotic new class of transients, 50 times brighter than classical supernovae, that have only been identified within the past decade. Little is known about the nature of the progenitors of these massive explosions. To date fewer than 100 of these have been discovered, and most have single-band photometry, poor light-curve coverage, and are at low to moderate redshift. The Dark Energy Survey (DES) has spectroscopically-classified 17 SLSNe from $0.2 < z < 2.0$, all of which have well-cadenced griz photometry spanning the entirety of the 5.5 month DES observing season. While the data quality is uniformly excellent, the variability in the SLSNe themselves is remarkable: the rise time, the decline rate, and the peak magnitudes all exhibit large variations. Here we propose to obtain rest-frame NUV photometry to probe the environment of SLSNe discovered in DES. We will determine the local and global star-formation rates (SFRs), and morphology and compactness of the galaxy. These observations will double the existing sample of SLSNe at $z>0.5$ for which these host-galaxy properties can be determined. We will then use this information to conduct the first systematic study of host-galaxy correlations with SLSN light-curve properties. By tying environmental constraints to observed characteristics of the explosion, this study will get to the heart of the SLSN progenitor question.

OBSERVING DESCRIPTION

We observe with WFC3-UVIS the host galaxies of all 17 superluminous supernovae (SLSNe) discovered in the first 4 years of the Dark Energy Survey (DES). The purpose of these observations is to a) constrain their local and global star-formation rates, and b) measure their host-galaxy morphologies, with the goal of correlating this information with the SLSNe DES multi-band light-curves and learning how these rare events depend on their environments.

The best indicator of star-formation rate on the scale of < 100Myr is measuring the NUV flux emitted from young, massive stars. For each SLSN host galaxy we observe in the filter such that such that the effective wavelength is closest to 2500A: F336W (0.20 < z < 0.45); F390W (0.45 < z < 0.75); F475W (0.75 < z < 1); F555W (1 < z < 1.2); F606W (1.2 < z < 1.4); F625W (1.4 < z < 1.8); and F775W (1.8 < z < 2.3).

Our exposure times are driven by their ability to produce a density profile of NUV flux measurements, such that measurements local to the SLSN can be made and compared across the galaxy. Our goal is to achieve a minimum SNR in the UV of ~5 per 2x2 binned pixel (0.08" x 0.08"), allowing the SN location to be localized and trends across the galaxy measured. According to the WFC ETC, for the 12 detected hosts in our sample (g < 25.5) we reach our desired SNR in a single orbit. For the other 5 non-detected hosts, we use WFC3-UVIS to detect the galaxy and measure the global SFR. We make a 10-sigma detection of these galaxies down to m ~ 27.5 with a two-orbit observations.

We execute a 4-point dither for each observation, and add FLASH to observations where the APT suggests the electron background would otherwise be too low.

Visit

Proposal 15303, DES15S2nr (01), completed Wed Jan 24 02:00:28 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Comments: A dithered set of exposures using the F336W filter.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1)

Fixed Targets

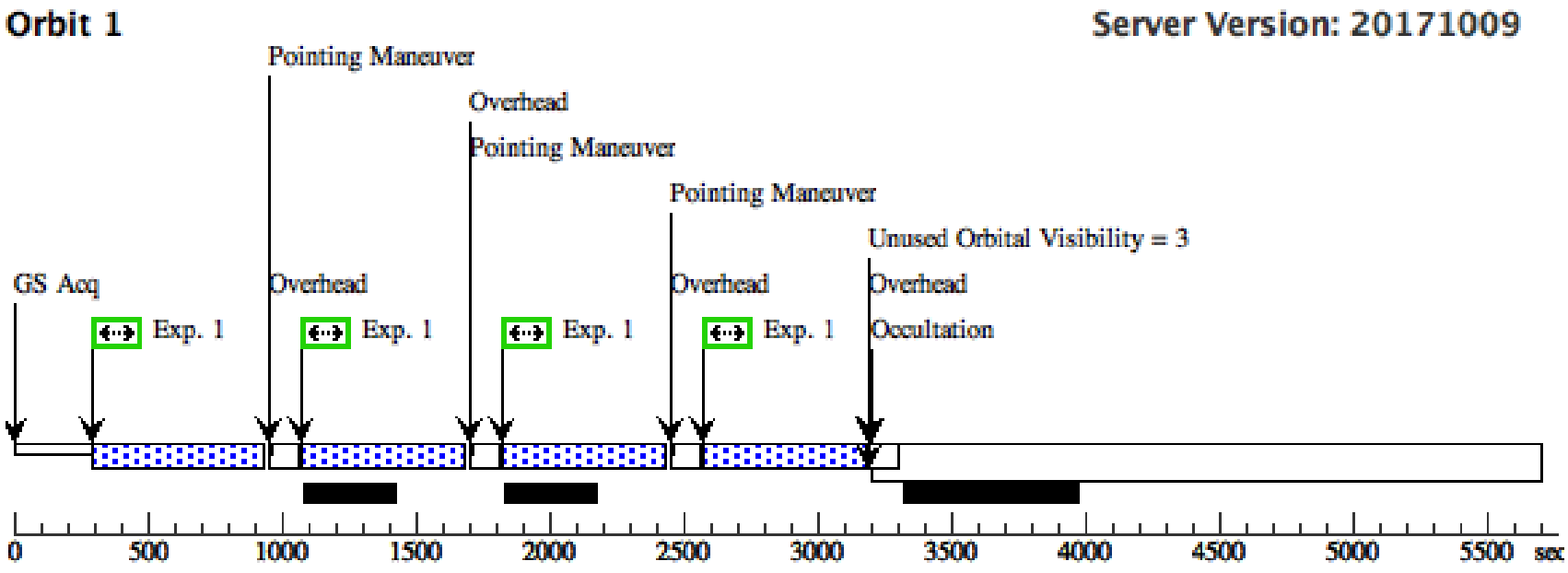
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	DES15S2NR-HOST	RA: 02 40 44.6600 (40.1860833d) Dec: -00 53 25.90 (-.89053d) Equinox: J2000		V=(?) g=23.8	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[STAR FORMING REGION]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	DES15S2nr-HOST	(1) DES15S2NR-HOST	WFC3/UVIS, ACCUM, UVIS	F336W	FLASH=10		Pattern 1, Exps 1-1 in DES15S2nr (01) (1)	600 Secs (2456 Secs) *[==>614.0 Secs (Pattern 1)]* *[==>614.0 Secs (Pattern 2)]* *[==>614.0 Secs (Pattern 3)]* *[==>614.0 Secs (Pattern 4)]*	***[1]***

Orbit Structure



Visit

Proposal 15303, DES15C3hav (02), scheduling Wed Jan 24 02:00:28 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Comments: A dithered set of exposures using the F336W filter.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1)

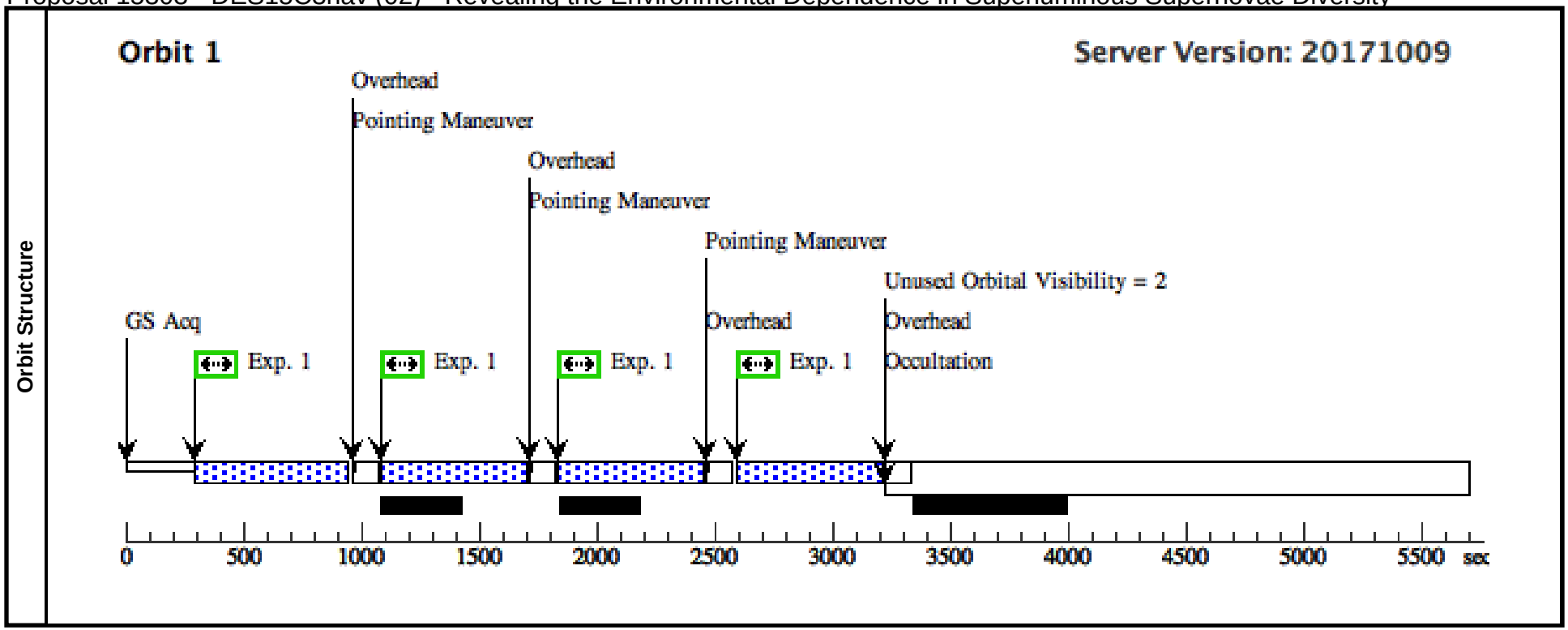
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	DES15C3HAV-HOST	RA: 03 31 52.1900 (52.9674583d) Dec: -28 15 9.60 (-28.25267d) Equinox: J2000		V=(?) g=24.7	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[STAR FORMING REGION]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	DES15C3hav-HOST	(2) DES15C3HAV-HOST	WFC3/UVIS, ACCUM, UVIS	F336W	FLASH=10		Pattern 1, Exps 1-1 in DES15C3hav (02) (1)	600 Secs (2480 Secs) *[==>620.0 Secs (Pattern 1)]* *[==>620.0 Secs (Pattern 2)]* *[==>620.0 Secs (Pattern 3)]* *[==>620.0 Secs (Pattern 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20171009
Overhead
Pointing Maneuver
Overhead
Pointing Maneuver
Pointing Maneuver
Unused Orbital Visibility = 2
GS Acq
Exp. 1
Exp. 1
Exp. 1
Overhead
Exp. 1
Overhead
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15303, DES14C1rhg (03), scheduling Wed Jan 24 02:00:28 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Comments: A dithered set of exposures using the F336W filter.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1)

Fixed Targets

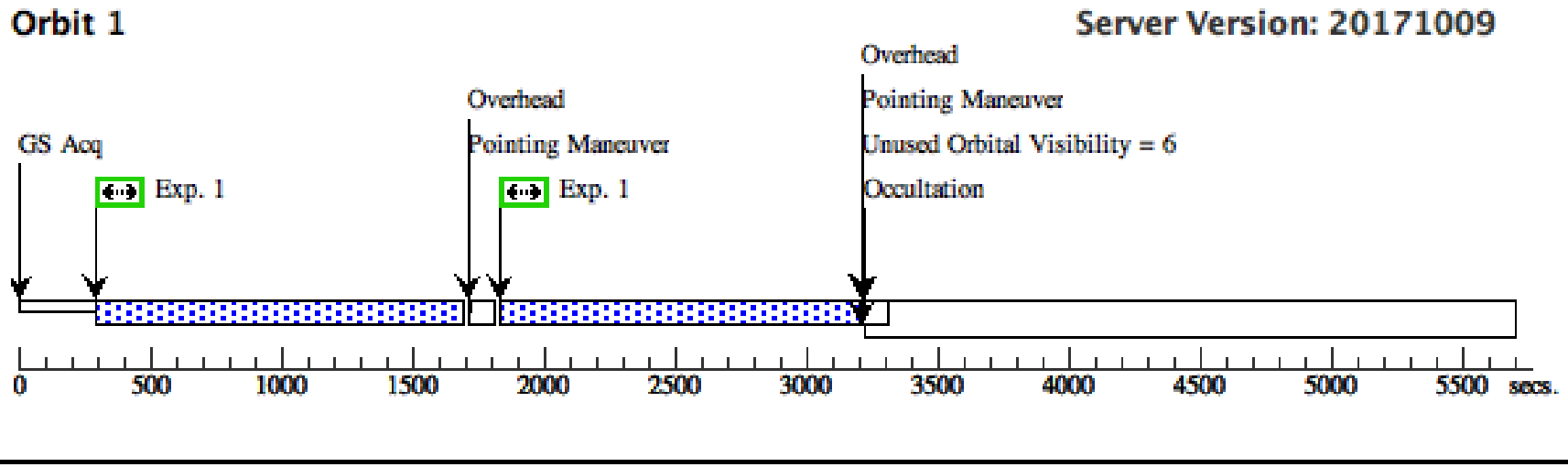
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	DES14C1RHG-HOST	RA: 03 38 7.2638 (54.5302658d) Dec: -27 42 45.62 (-27.71267d) Equinox: J2000		V=(?) g>25.5	Reference Frame: ICRS

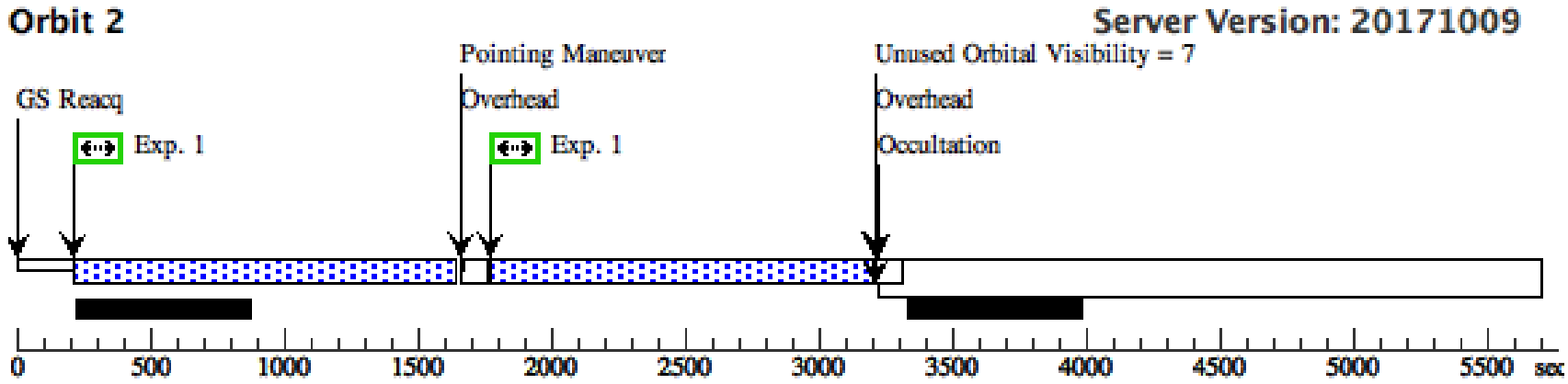
Comments:
Category=GALAXY
Description=[STAR FORMING REGION]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	DES14C1rhg-HOST	(3) DES14C1RHG-HOST	WFC3/UVIS, ACCUM, UVIS	F390W		GS ACQ SCENARIO BASE1B3	Pattern 1, Exps 1-1 in DES14C1rhg (03) (1)	1350 Secs (5610 Secs)	
								[==>1375.0 Secs (Pattern 1)] *[==>1375.0 Secs (Pattern 2)]*	***[1]***
								[==>1430.0 Secs (Pattern 3)] *[==>1430.0 Secs (Pattern 4)]*	***[2]***

Orbit Structure





Visit

Proposal 15303, DES15S1nog (04), scheduled Wed Jan 24 02:00:28 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Comments: A dithered set of exposures using the F390W

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1)

Fixed Targets

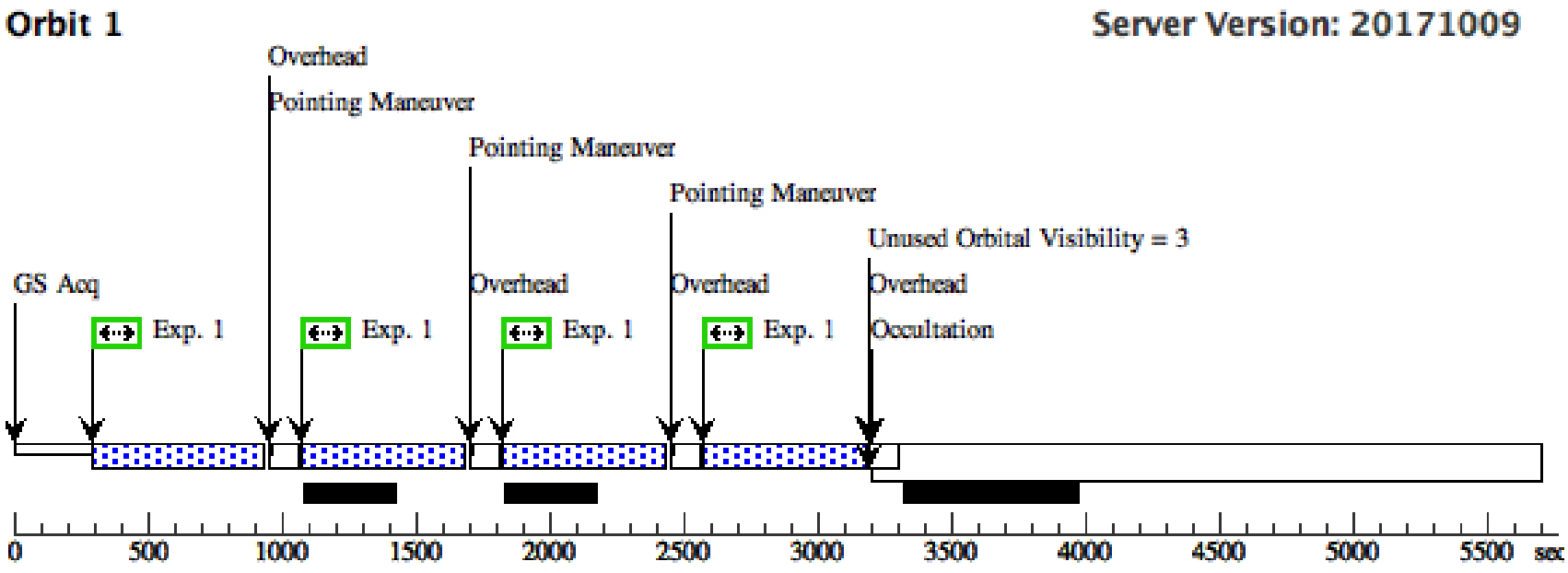
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	DES15S1NOG-HOST	RA: 02 52 14.9818 (43.0624242d) Dec: -00 44 36.33 (-.74343d) Equinox: J2000		V=(?) g=23.4	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[STAR FORMING REGION]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	DES14S1nog-HOST	(4) DES15S1NOG-HOST	WFC3/UVIS, ACCUM, UVIS	F390W	FLASH=10		Pattern 1, Exps 1-1 in DES15S1nog (04) (1)	600 Secs (2456 Secs) *[==>614.0 Secs (Pattern 1)]* *[==>614.0 Secs (Pattern 2)]* *[==>614.0 Secs (Pattern 3)]* *[==>614.0 Secs (Pattern 4)]*	***[1]***

Orbit Structure



Visit

Proposal 15303, DES16C3dmp (05), scheduling Wed Jan 24 02:00:28 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Comments: A dithered set of exposures using the F336W filter.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1)

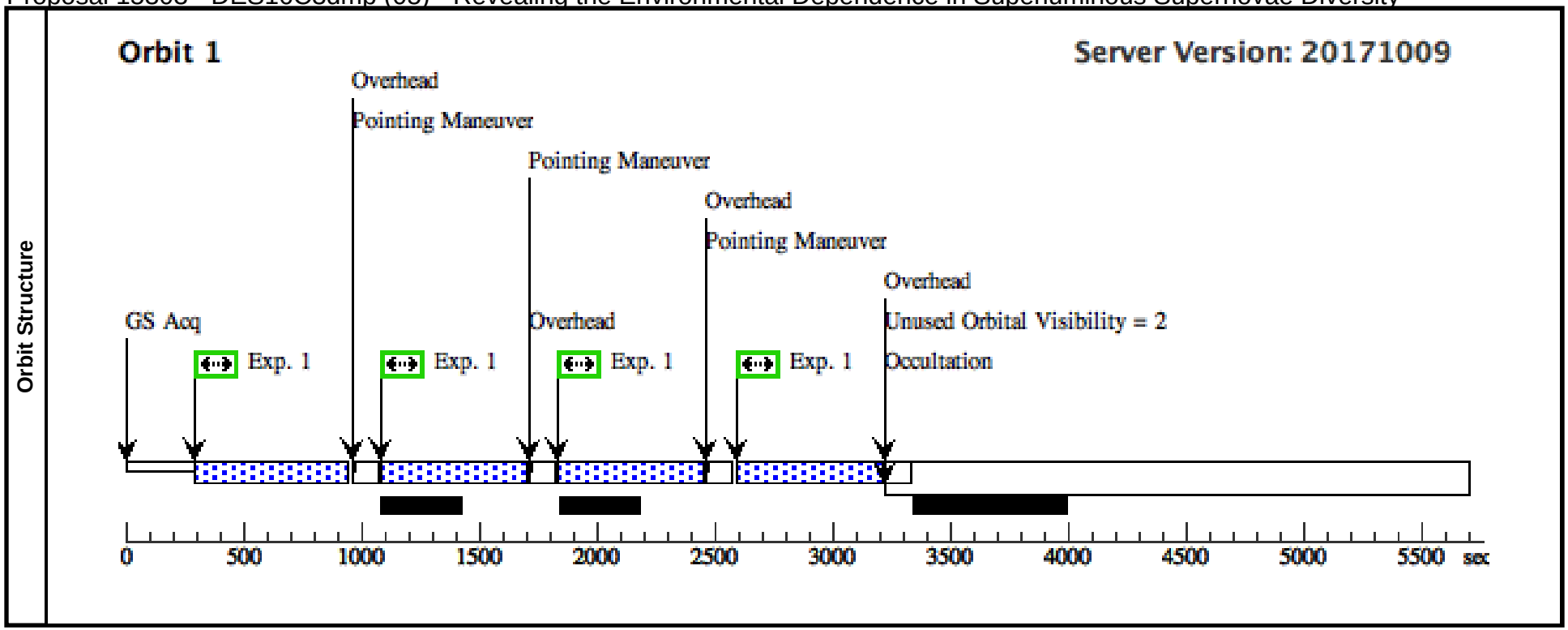
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(5)	DES16C3DMP-HOST	RA: 03 31 28.3500 (52.8681250d) Dec: -28 32 28.30 (-28.54119d) Equinox: J2000		V=(?) g=22.3	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[STAR FORMING REGION]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	DES16C3dmp-HOST	(5) DES16C3DMP-HOST	WFC3/UVIS, ACCUM, UVIS	F390W	FLASH=10		Pattern 1, Exps 1-1 in DES16C3dmp (05) (1)	600 Secs (2480 Secs) *[==>620.0 Secs (Pattern 1)]* *[==>620.0 Secs (Pattern 2)]* *[==>620.0 Secs (Pattern 3)]* *[==>620.0 Secs (Pattern 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20171009
Overhead
Pointing Maneuver
Pointing Maneuver
Overhead
Pointing Maneuver
Overhead
Unused Orbital Visibility = 2
Occultation
GS Acq
Exp. 1
Exp. 1
Overhead
Exp. 1
Exp. 1
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15303, DES14X3taz (06), scheduling Wed Jan 24 02:00:28 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Comments: A dithered set of exposures using the F336W filter.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1)

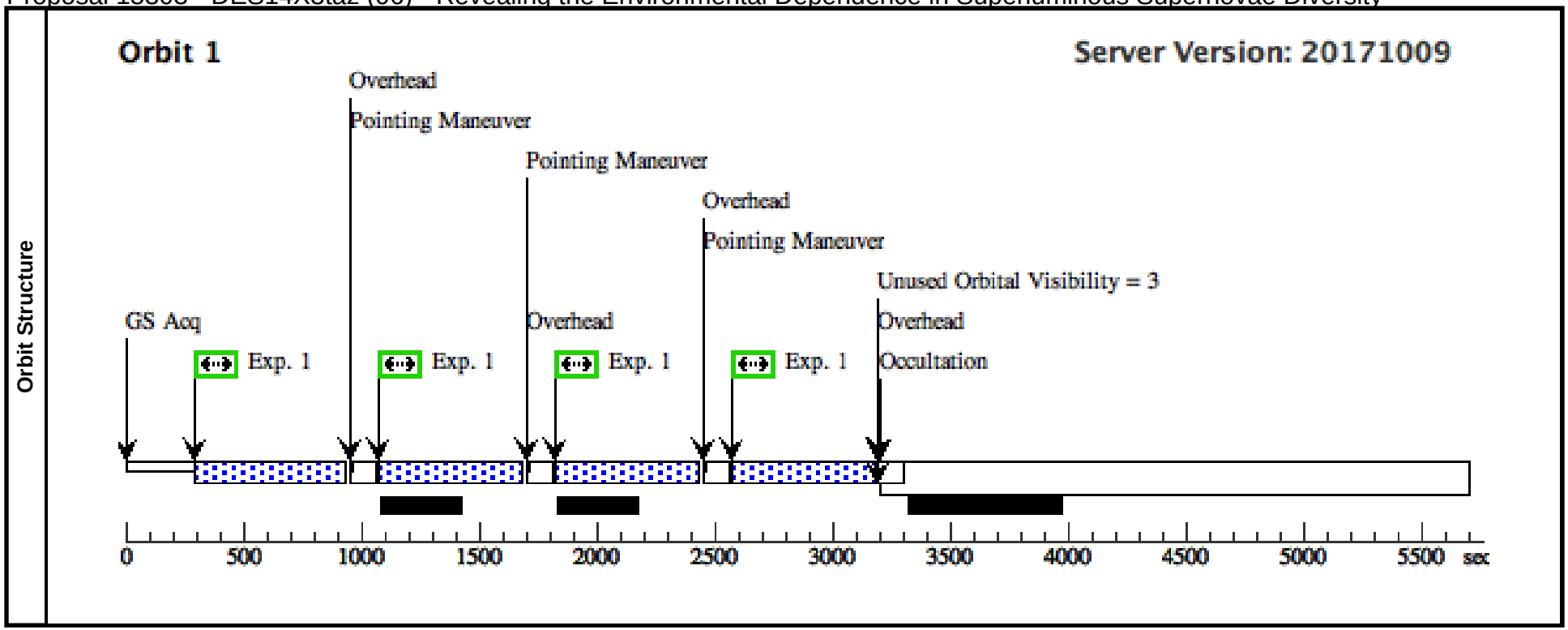
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(6)	DES14X3TAZ-HOST	RA: 02 28 4.4642 (37.0186008d) Dec: -04 05 12.71 (-4.08686d) Equinox: J2000		V=(?) g=25.5	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[STAR FORMING REGION]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	DES14X3taz-HOST	(6) DES14X3TAZ-HOST	WFC3/UVIS, ACCUM, UVIS	F390W	FLASH=10		Pattern 1, Exps 1-1 in DES14X3taz (06) (1)	600 Secs (2456 Secs) *[==>614.0 Secs (Pattern 1)]* *[==>614.0 Secs (Pattern 2)]* *[==>614.0 Secs (Pattern 3)]* *[==>614.0 Secs (Pattern 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20171009
Overhead
Pointing Maneuver
Pointing Maneuver
Overhead
Pointing Maneuver
Unused Orbital Visibility = 3
GS Acq
Exp. 1
Exp. 1
Overhead
Exp. 1
Exp. 1
Overhead
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15303, DES13S2cmm (07), scheduling Wed Jan 24 02:00:28 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Comments: A dithered set of exposures using the F336W filter.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1)

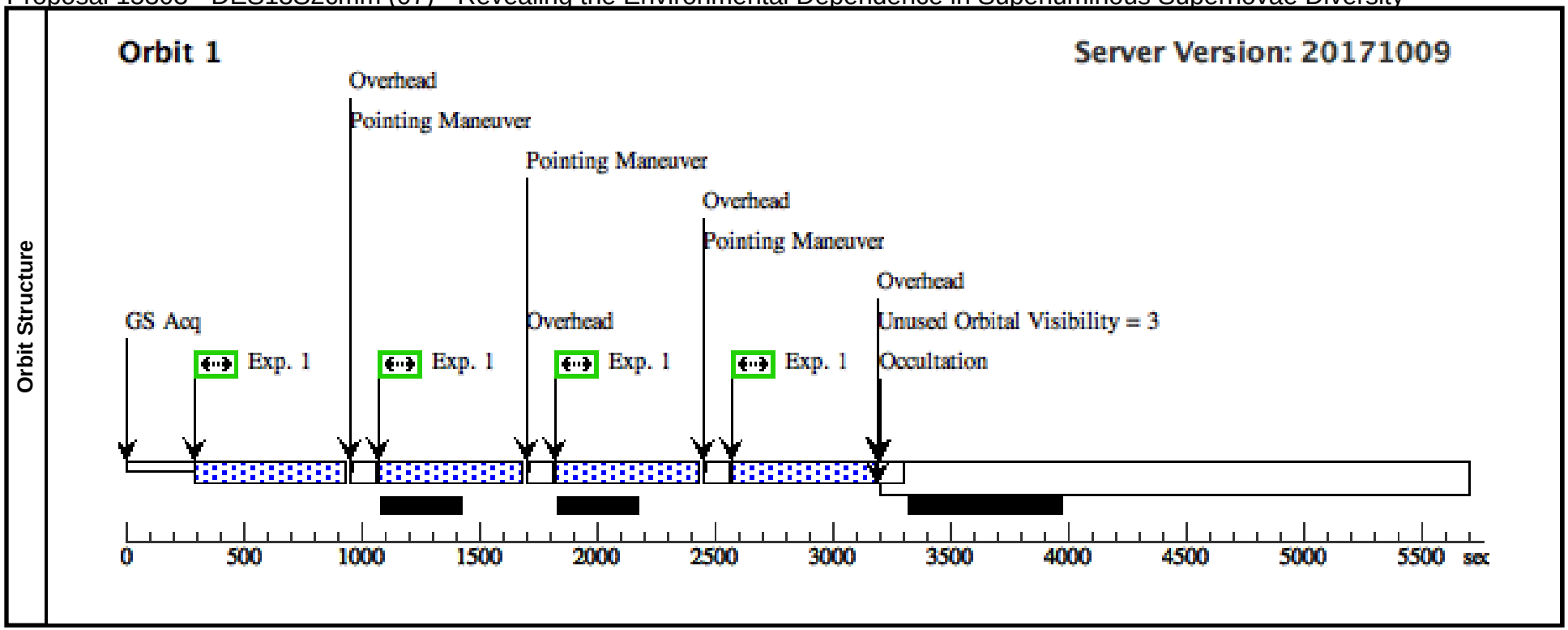
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(7)	DES13S2CMM-HOST	RA: 02 42 32.8300 (40.6367917d) Dec: -01 21 30.10 (-1.35836d) Equinox: J2000		V=(?) g=24.0	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[STAR FORMING REGION]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	DES13S2cmm-HOST	(7) DES13S2CMM-HOST	WFC3/UVIS, ACCUM, UVIS	F390W	FLASH=10		Pattern 1, Exps 1-1 in DES13S2cmm (07) (1)	600 Secs (2456 Secs) *[==>614.0 Secs (Pattern 1)]* *[==>614.0 Secs (Pattern 2)]* *[==>614.0 Secs (Pattern 3)]* *[==>614.0 Secs (Pattern 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20171009
Overhead
Pointing Maneuver
Pointing Maneuver
Overhead
Pointing Maneuver
Overhead
GS Acq
Exp. 1
Exp. 1
Overhead
Exp. 1
Exp. 1
Unused Orbital Visibility = 3
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15303, DES16C3cv (08), completed Wed Jan 24 02:00:28 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Comments: A dithered set of exposures using the F336W filter.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1)

Fixed Targets

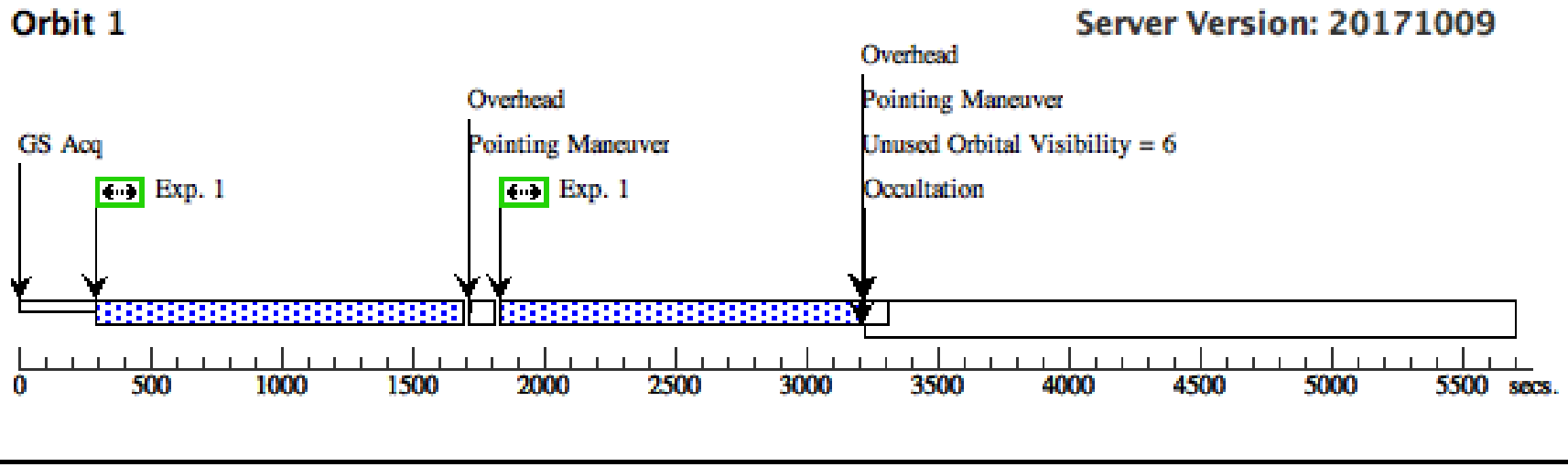
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(8)	DES16C3CV-HOST	RA: 03 27 16.7100 (51.8196250d) Dec: -28 42 45.90 (-28.71275d) Equinox: J2000		V=(?) g>26.5	Reference Frame: ICRS

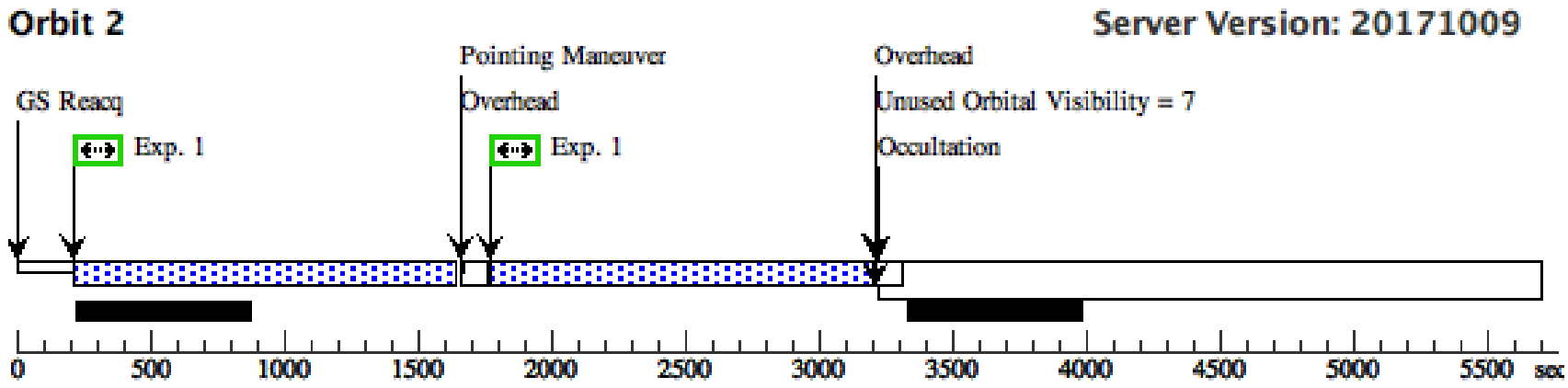
Comments:
Category=GALAXY
Description=[STAR FORMING REGION]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	DES16C3cv-HOST	(8) DES16C3CV-HOST	WFC3/UVIS, ACCUM, UVIS	F390W			Pattern 1, Exps 1-1 in DES16C3cv (08) (1)	1350 Secs (5610 Secs)	
								[==>1375.0 Secs (Pattern 1)] *[==>1375.0 Secs (Pattern 2)]*	***[1]***
								[==>1430.0 Secs (Pattern 3)] *[==>1430.0 Secs (Pattern 4)]*	***[2]***

Orbit Structure





Visit

Proposal 15303, DES15X3hm (09), scheduling Wed Jan 24 02:00:28 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Comments: A dithered set of exposures using the F336W filter.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1)

Fixed Targets

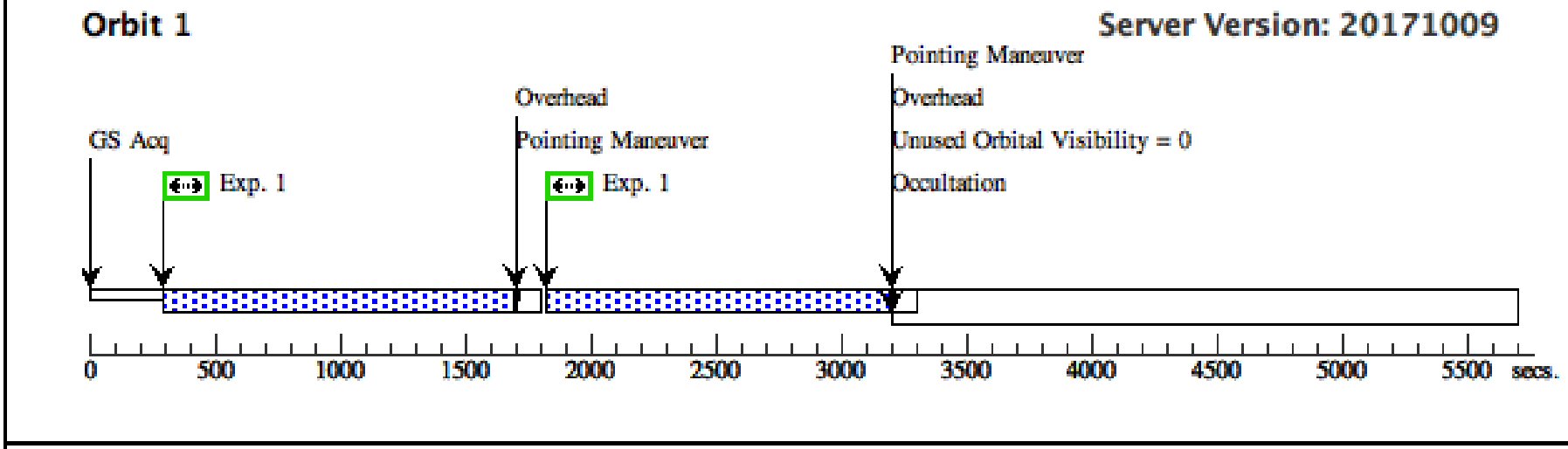
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(9)	DES15X3HM-HOST	RA: 02 26 54.9583 (36.7289929d) Dec: -05 03 37.99 (-5.06055d) Equinox: J2000		V=(?) g>26.5	Reference Frame: ICRS

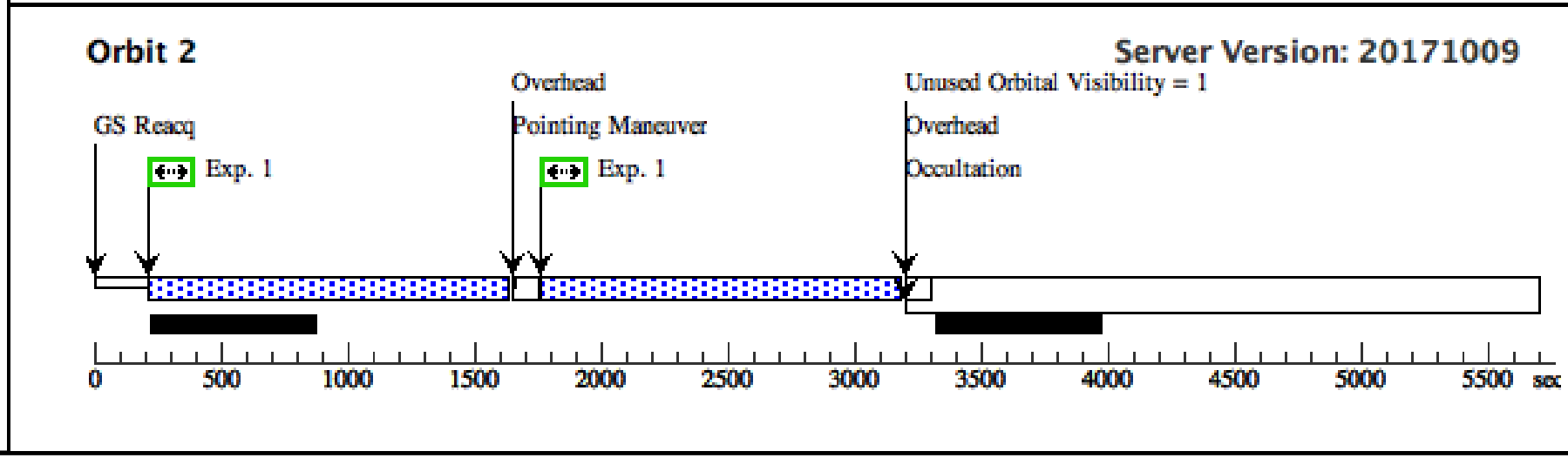
Comments:
Category=GALAXY
Description=[STAR FORMING REGION]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	DES15X3hm-HOST	(9) DES15X3HM-HOST	WFC3/UVIS, ACCUM, UVIS	F475W			Pattern 1, Exps 1-1 in DES15X3hm (09) (1)	1350 Secs (5582 Secs)	
								[==>1368.0 Secs (Pattern 1)] *[==>1368.0 Secs (Pattern 2)]*	***[1]***
								[==>1423.0 Secs (Pattern 3)] *[==>1423.0 Secs (Pattern 4)]*	***[2]***

Orbit Structure





Visit

Proposal 15303, DES14X2byo (10), scheduled Wed Jan 24 02:00:28 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Comments: A dithered set of exposures using the F336W filter.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1)

Fixed Targets

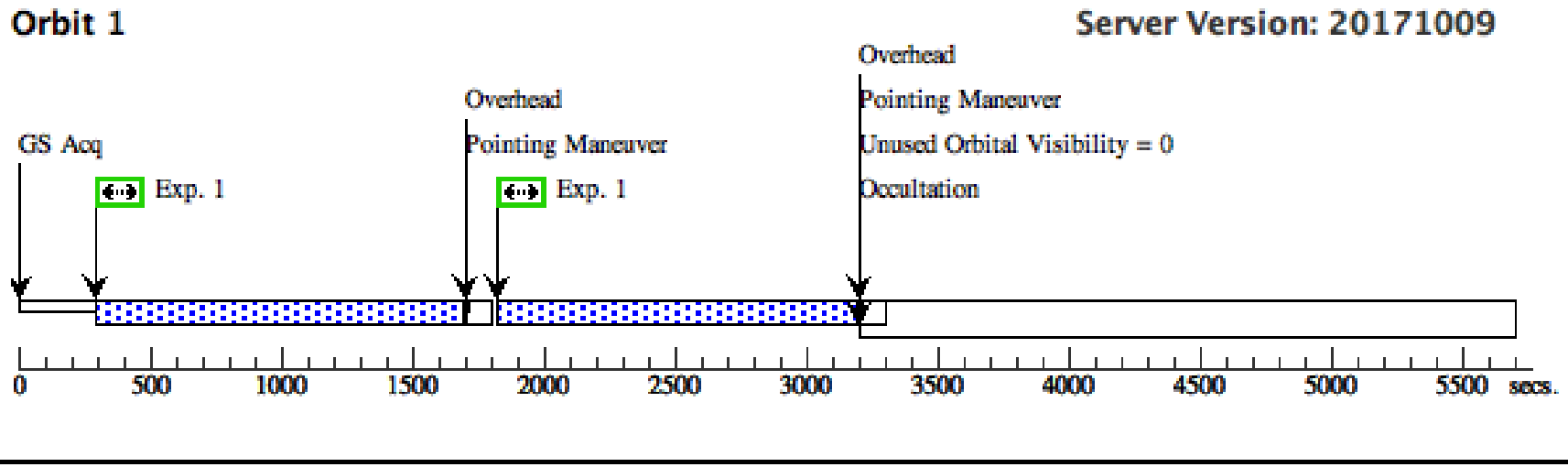
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(10)	DES14X2BYO-HOST	RA: 02 23 46.9262 (35.9455258d) Dec: -06 08 12.30 (-6.13675d) Equinox: J2000		V=(?) g>25.5	Reference Frame: ICRS

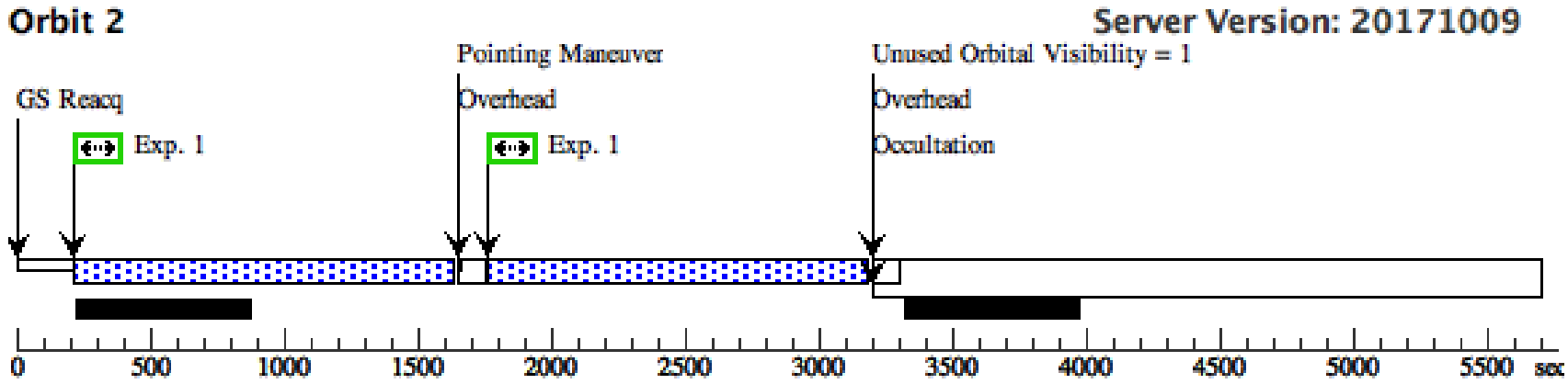
Comments:
Category=GALAXY
Description=[STAR FORMING REGION]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	DES14X2byo-HOST	(10) DES14X2BYO-HOST	WFC3/UVIS, ACCUM, UVIS	F475W			Pattern 1, Exps 1-1 in DES14X2byo (10) (1)	1350 Secs (5582 Secs)	
								[==>1368.0 Secs (Pattern 1)] *[==>1368.0 Secs (Pattern 2)]*	***[1]***
								[==>1423.0 Secs (Pattern 3)] *[==>1423.0 Secs (Pattern 4)]*	***[2]***

Orbit Structure





Visit

Proposal 15303, DES16C3ggu (11), scheduling Wed Jan 24 02:00:28 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Comments: A dithered set of exposures using the F336W filter.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1)

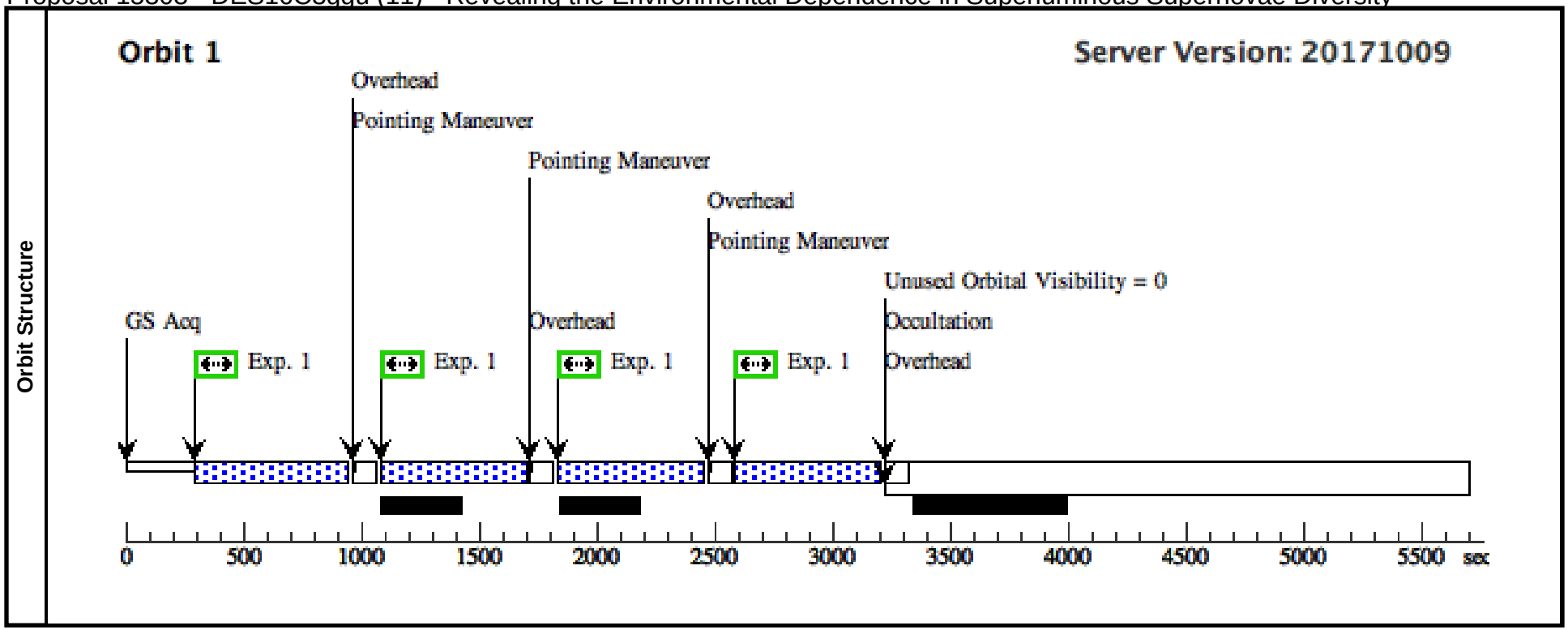
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(11)	DES16C3GGU-HOST	RA: 03 31 12.0000 (52.8000000d) Dec: -28 34 38.70 (-28.57742d) Equinox: J2000		V=(?) g=25.5	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[STAR FORMING REGION]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	DES16C3ggu-HOST	(11) DES16C3GGU-HOST	WFC3/UVIS, ACCUM, UVIS	F475W			Pattern 1, Exps 1-1 in DES16C3ggu (11) (1)	600 Secs (2500 Secs) *[==>625.0 Secs (Pattern 1)]* *[==>625.0 Secs (Pattern 2)]* *[==>625.0 Secs (Pattern 3)]* *[==>625.0 Secs (Pattern 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20171009
Overhead
Pointing Maneuver
Pointing Maneuver
Overhead
Pointing Maneuver
Unused Orbital Visibility = 0
GS Acq
Exp. 1
Exp. 1
Overhead
Exp. 1
Exp. 1
Occultation
Overhead
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15303, DES16C2aix (12), scheduling Wed Jan 24 02:00:28 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Comments: A dithered set of exposures using the F336W filter.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1)

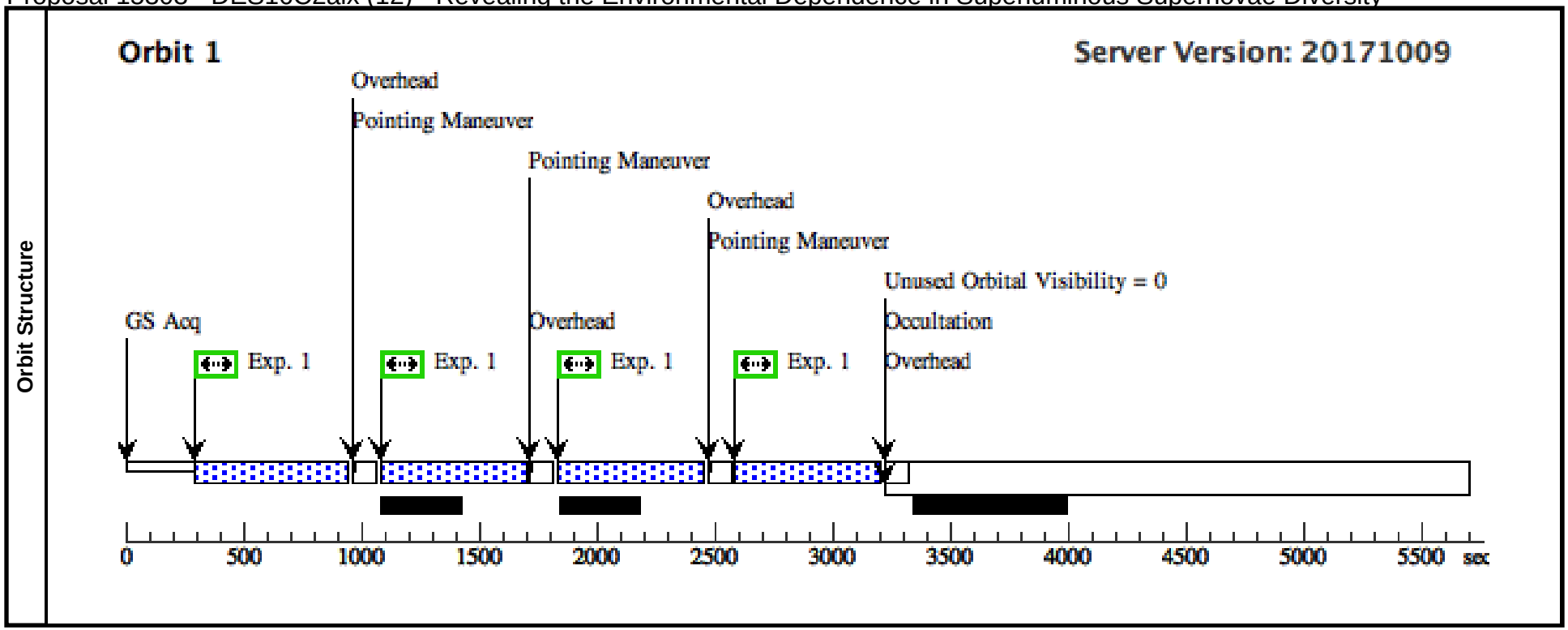
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(12)	DES16C2AIX-HOST	RA: 03 40 41.1700 (55.1715417d) Dec: -29 22 48.40 (-29.38011d) Equinox: J2000		V=(?) r=24.7	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[STAR FORMING REGION]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	DES16C2aix-HOST	(12) DES16C2AIX-HOST	WFC3/UVIS, ACCUM, UVIS	F555W			Pattern 1, Exps 1-1 in DES16C2aix (12) (1)	600 Secs (2500 Secs) *[==>625.0 Secs (Pattern 1)]* *[==>625.0 Secs (Pattern 2)]* *[==>625.0 Secs (Pattern 3)]* *[==>625.0 Secs (Pattern 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20171009
Overhead
Pointing Maneuver
Pointing Maneuver
Overhead
Pointing Maneuver
Unused Orbital Visibility = 0
GS Acq
Overhead
Occultation
Exp. 1
Exp. 1
Exp. 1
Exp. 1
Overhead
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15303, DES15X1noe (13), scheduling Wed Jan 24 02:00:28 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Comments: A dithered set of exposures using the F336W filter.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1)

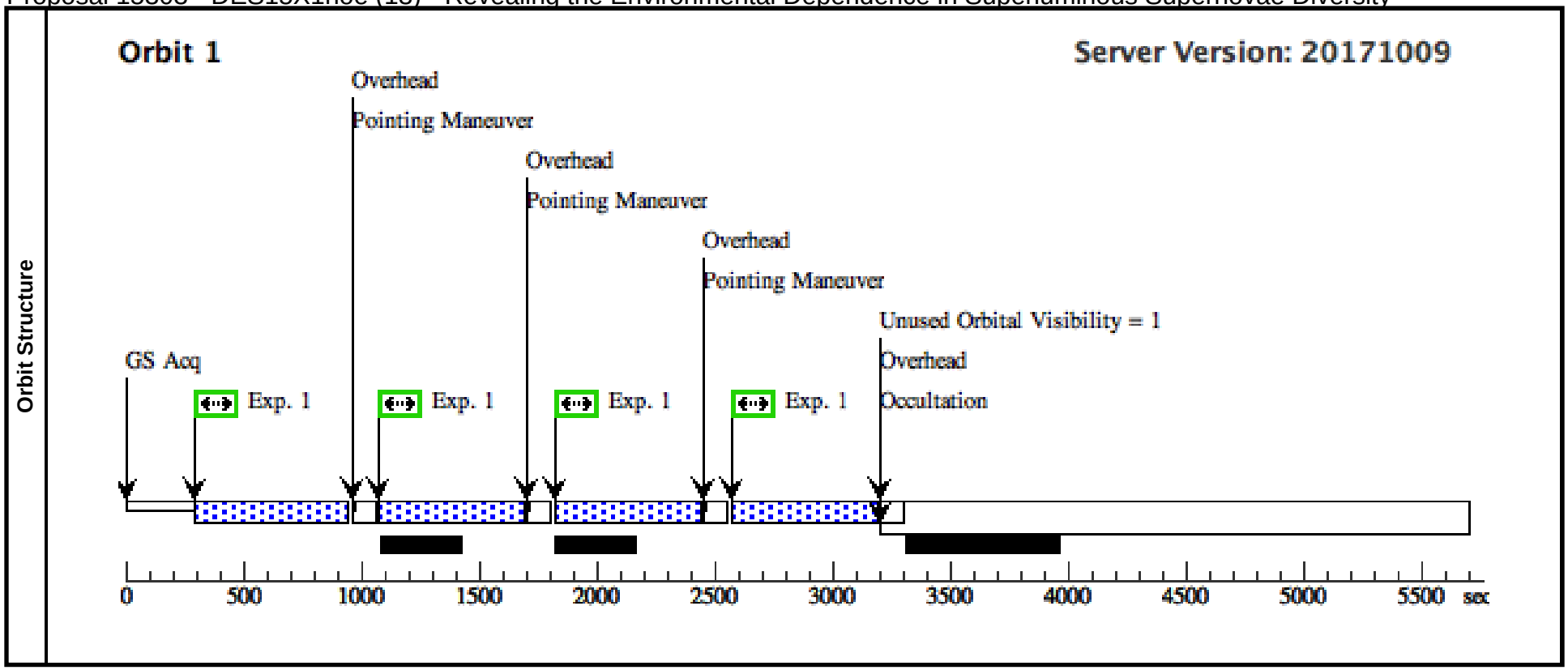
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(13)	DES15X1NOE-HOST	RA: 02 14 41.9275 (33.6746979d) Dec: -04 52 54.58 (-4.88183d) Equinox: J2000		V=(?) r=23.8	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[STAR FORMING REGION]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	DES15X1noe-HOST	(13) DES15X1NOE-HOST	WFC3/UVIS, ACCUM, UVIS	F555W			Pattern 1, Exps 1-1 in DES15X1noe (13) (1)	600 Secs (2476 Secs) *[==>619.0 Secs (Pattern 1)]* *[==>619.0 Secs (Pattern 2)]* *[==>619.0 Secs (Pattern 3)]* *[==>619.0 Secs (Pattern 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20171009
Overhead
Pointing Maneuver
Overhead
Pointing Maneuver
Overhead
Pointing Maneuver
Unused Orbital Visibility = 1
Overhead
Occultation
GS Acq
Exp. 1
Exp. 1
Exp. 1
Exp. 1
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15303, DES14C1fi (14), scheduling Wed Jan 24 02:00:29 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Comments: A dithered set of exposures using the F336W filter.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1)

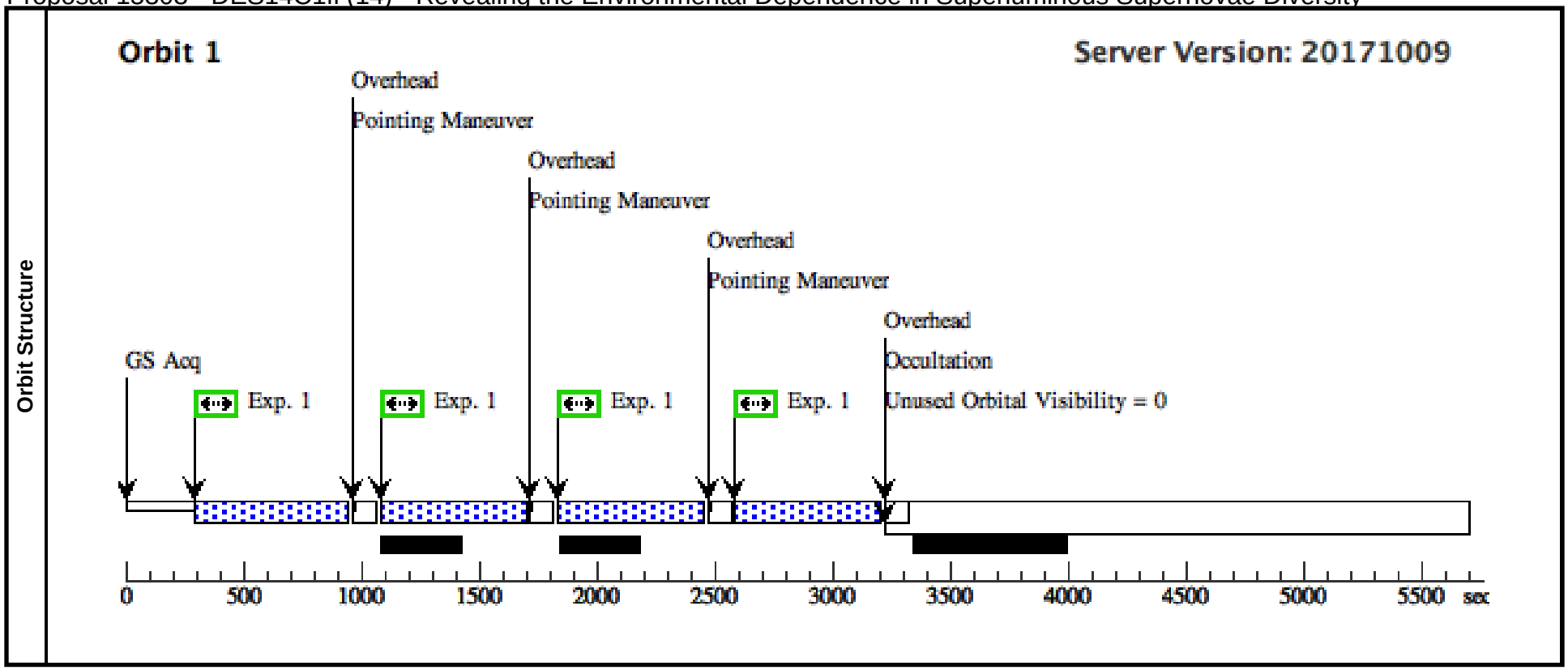
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(14)	DES14C1FI-HOST	RA: 03 33 49.7954 (53.4574808d) Dec: -27 03 31.63 (-27.05879d) Equinox: J2000		V=(?) r=24.6	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[STAR FORMING REGION]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	DES14C1fi-HOST	(14) DES14C1FI-HOST	WFC3/UVIS, ACCUM, UVIS	F606W			Pattern 1, Exps 1-1 in DES14C1fi (14) (1)	600 Secs (2500 Secs) *[==>625.0 Secs (Pattern 1)]* *[==>625.0 Secs (Pattern 2)]* *[==>625.0 Secs (Pattern 3)]* *[==>625.0 Secs (Pattern 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20171009
Overhead
Pointing Maneuver
Overhead
Pointing Maneuver
Overhead
Pointing Maneuver
Overhead
Occultation
Unused Orbital Visibility = 0
GS Acq
Exp. 1
Exp. 1
Exp. 1
Exp. 1
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15303, DES14S2qri (15), scheduling Wed Jan 24 02:00:29 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Comments: A dithered set of exposures using the F336W filter.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1)

Fixed Targets

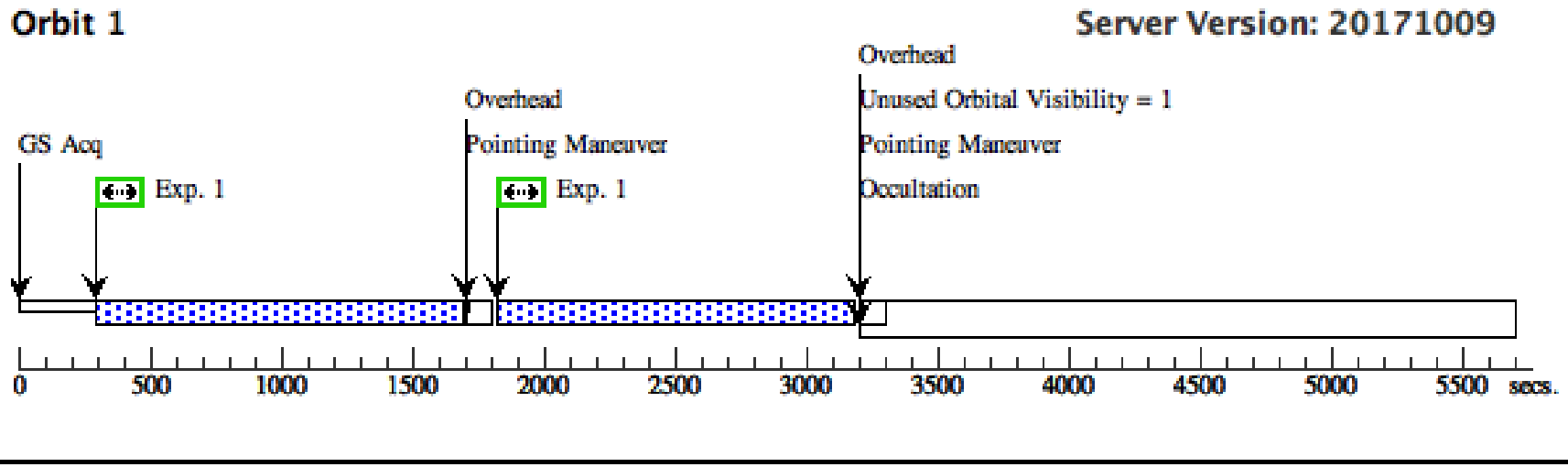
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(15)	DES14S2QRI-HOST	RA: 02 43 32.1396 (40.8839150d) Dec: -01 07 34.18 (-1.12616d) Equinox: J2000		V=(?) r>25.5	Reference Frame: ICRS

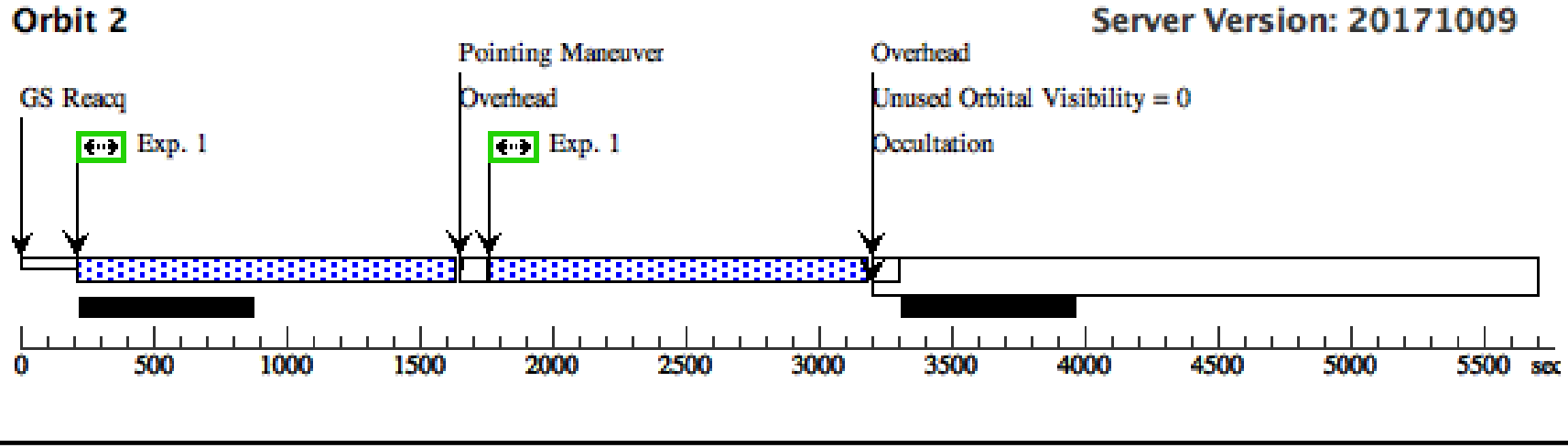
Comments:
Category=GALAXY
Description=[STAR FORMING REGION]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	DES14S2qri-HOST	(15) DES14S2QRI-HOST	WFC3/UVIS, ACCUM, UVIS	F625W			Pattern 1, Exps 1-1 in DES14S2qri (15) (1)	1350 Secs (5576 Secs)	
								[==>1366.0 Secs (Pattern 1)] *[==>1366.0 Secs (Pattern 2)]*	***[1]***
								[==>1422.0 Secs (Pattern 3)] *[==>1422.0 Secs (Pattern 4)]*	***[2]***

Orbit Structure





Visit

Proposal 15303, DES15E2mlf (16), completed Wed Jan 24 02:00:29 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Comments: A dithered set of exposures using the F336W filter.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1)

Fixed Targets

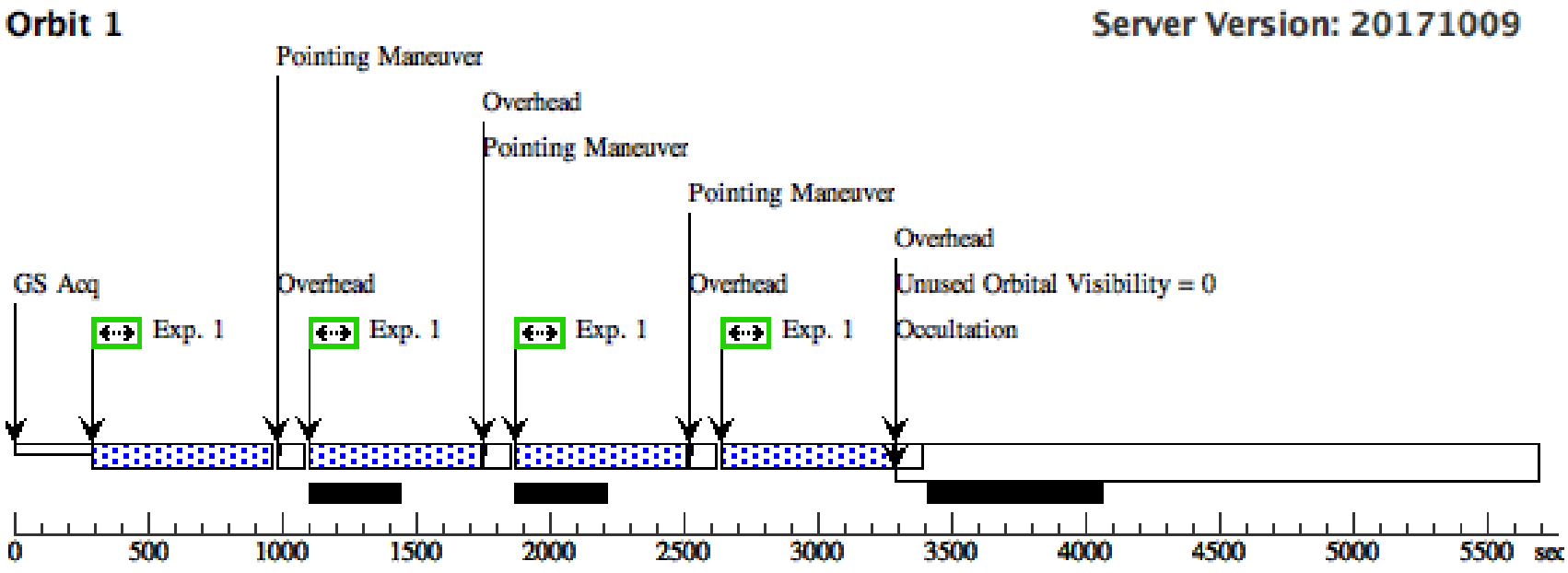
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(16)	DES15E2MLF-HOST	RA: 00 41 33.3984 (10.3891600d) Dec: -43 27 17.21 (-43.45478d) Equinox: J2000		V=(?) i=23.5	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[STAR FORMING REGION]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	DES15E2mlf-HOST	(16) DES15E2MLF-HOST	WFC3/UVIS, ACCUM, UVIS	F775W	FLASH=1		Pattern 1, Exps 1-1 in DES15E2mlf (16) (1)	600 Secs (2564 Secs) *[==>641.0 Secs (Pattern 1)]* *[==>641.0 Secs (Pattern 2)]* *[==>641.0 Secs (Pattern 3)]* *[==>641.0 Secs (Pattern 4)]*	***[1]***

Orbit Structure



Visit

Proposal 15303, DES16C2nm (17), scheduling Wed Jan 24 02:00:29 GMT 2018

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Comments: A dithered set of exposures using the F336W filter.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false		(1)

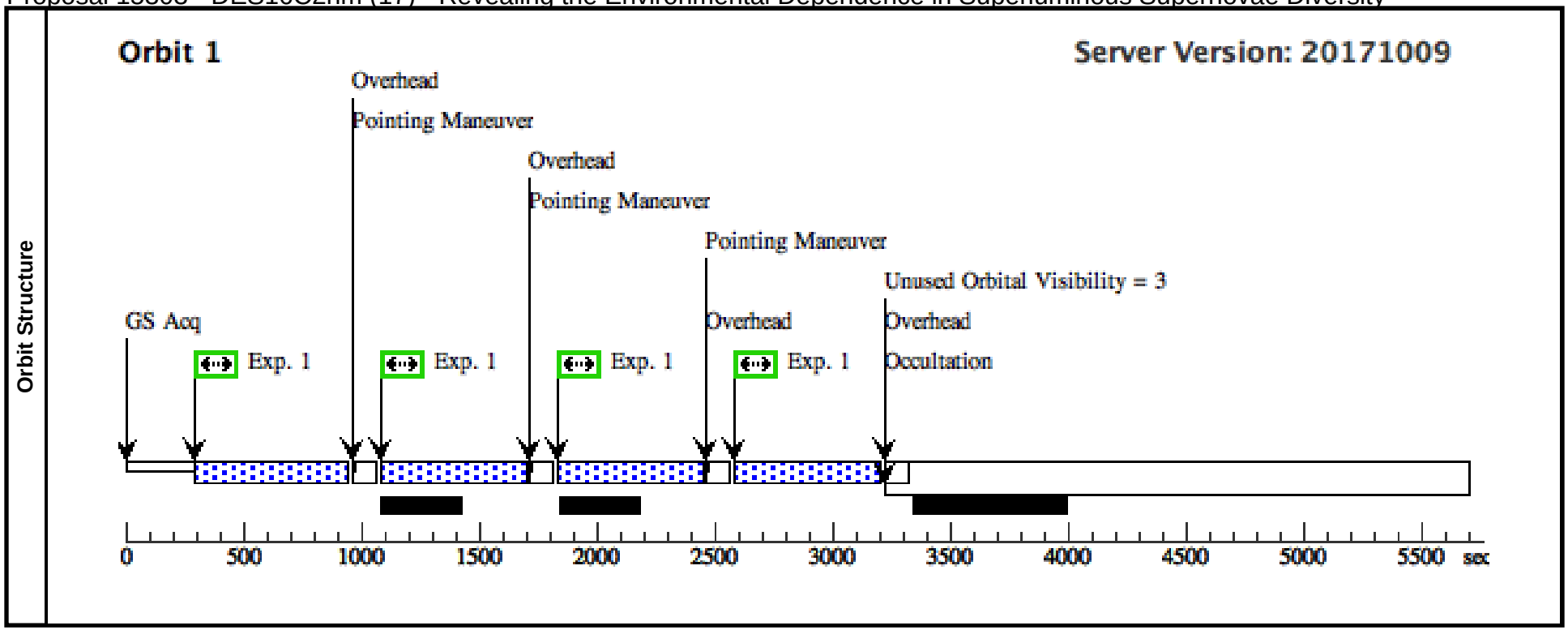
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(17)	DES16C2NM-HOST	RA: 03 40 14.8300 (55.0617917d) Dec: -29 05 53.50 (-29.09819d) Equinox: J2000		V=(?) i=24.9	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[STAR FORMING REGION]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	DES16C2nm-HOST	(17) DES16C2NM-HOST	WFC3/UVIS, ACCUM, UVIS	F775W	FLASH=1		Pattern 1, Exps 1-1 in DES16C2nm (17) (1)	600 Secs (2488 Secs) *[==>622.0 Secs (Pattern 1)]* *[==>622.0 Secs (Pattern 2)]* *[==>622.0 Secs (Pattern 3)]* *[==>622.0 Secs (Pattern 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20171009
Overhead
Pointing Maneuver
Overhead
Pointing Maneuver
Pointing Maneuver
Unused Orbital Visibility = 3
GS Acq
Exp. 1
Exp. 1
Exp. 1
Overhead
Exp. 1
Overhead
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec