14611 - Going gently into the night: constraining Type Ia supernova nucleosynthesis using late-time photometry

Cycle: 24, 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) SN2015F	WFC3/UVIS	2	16-Jun-2017 21:01:29.0	yes
02	(1) SN2015F	WFC3/UVIS	1	16-Jun-2017 21:01:30.0	yes
03	(1) SN2015F	WFC3/UVIS	2	16-Jun-2017 21:01:32.0	yes
04	(1) SN2015F	WFC3/UVIS	1	16-Jun-2017 21:01:33.0	yes
05	(1) SN2015F	WFC3/UVIS	2	16-Jun-2017 21:01:35.0	yes
06	(1) SN2015F	WFC3/UVIS	1	16-Jun-2017 21:01:36.0	yes
07	(1) SN2015F	WFC3/UVIS	2	16-Jun-2017 21:01:37.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
08	(1) SN2015F	WFC3/UVIS	1	16-Jun-2017 21:01:38.0	yes
09	(2) ASASSN-14LP	WFC3/UVIS	2	16-Jun-2017 21:01:40.0	yes
10	(2) ASASSN-14LP	WFC3/UVIS	1	16-Jun-2017 21:01:41.0	yes
11	(2) ASASSN-14LP	WFC3/UVIS	2	16-Jun-2017 21:01:42.0	yes
12	(2) ASASSN-14LP	WFC3/UVIS	1	16-Jun-2017 21:01:45.0	yes
13	(2) ASASSN-14LP	WFC3/UVIS	2	16-Jun-2017 21:01:46.0	yes
14	(1) SN2015F	WFC3/UVIS	1	16-Jun-2017 21:01:47.0	yes

21 Total Orbits Used

ABSTRACT

We propose to use WFC3 photometry to construct the optical light curves of the nearby Type Ia supernovae SN 2015F and ASASSN-14lp at late times (>500 days after maximum light). These light curves will allow us to conduct a fundamental test of the theoretically predicted behavior of Type Ia supernova light curves at late times. We will observationally determine whether the nuclear physics of Type Ia supernova ejecta are solely determined by the radioactive decay of 56Co to 56Fe, or whether (and by how much) other nuclear heating mechanisms (such as the leptonic decays of 57Co) become discernible, as predicted. The spatial resolution of HST+WFC3 is crucial to the success of this experiment. At these late times, the fading supernovae are as bright as other surrounding objects (bright stars, star clusters), which would dominate the point-spread functions of ground-based observatories. Due to the rarity of nearby Type Ia supernovae, this experiment will double the sample of supernovae for which this experiment has been conducted and cut the uncertainty on the results by half. Moreover, if this experiment is not conducted in Cycle 24, it is highly unlikely that we would be able to perform it again during the remaining lifetime of HST.

OBSERVING DESCRIPTION

We propose to observe the late-time light curves of two Type Ia supernovae (SNe Ia) with WFC3. Due to HST's visibility constraints, we will observe SN 2015F eight times (visits 01-08 in this proposal) and ASASSN-14lp five times (visits 09-13). To minimize the number of orbits used, the visits to each SN will alternate between one single orbit with F555W, and two orbits split between F555W, F438W, F625W, and F814W. This setup will allow us to construct the quasi-bolometric light curves of the SNe, with the added insurance of a high S/N F555W light curve, in case the S/N in any of the other filters is too low to construct the quasi-bolometric light curve. These two options will be sufficient for us to detect the anticipated

change in the light curves predicted from the decay of 57Co. The colors we measure here will also allow us to determine whether either of the two target SNe become contaminated by light echoes.

Unfortunately, there are no previous HST observations of the locations of these SNe (GO-13646 imaged the host-galaxy of SN 2015F, but the pointing did not include the location of the SN). Thus, our first visit to each SN will act as a test to determine the effect of the galaxy's diffuse background light on the observations and the S/N of the SN in each filter. We may have to adjust the exposure time we request for each filter for the following visits accordingly.

In each orbit, we request a 3-point line dither and use the UVIS2 aperture in order to minimize the effects of CTE, while maximizing the field and taking into account the telescope's rotation between epochs.

Visit

Proposal 14611, SN2015F +595 (01), completed Sat Jun 17 01:01:48 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: BETWEEN 06-NOV-2016:00:00:00 AND 16-NOV-2016:00:00:00

Comments: The first visit to SN2015F. We'll take images in F438W, F555W, F625W, and F814W. This initial observation will test whether the images are background limited in any of these filters. The results of this test will then decide whether, in following visits, we'll make changes to filters and exposure times.

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), (3), (4)

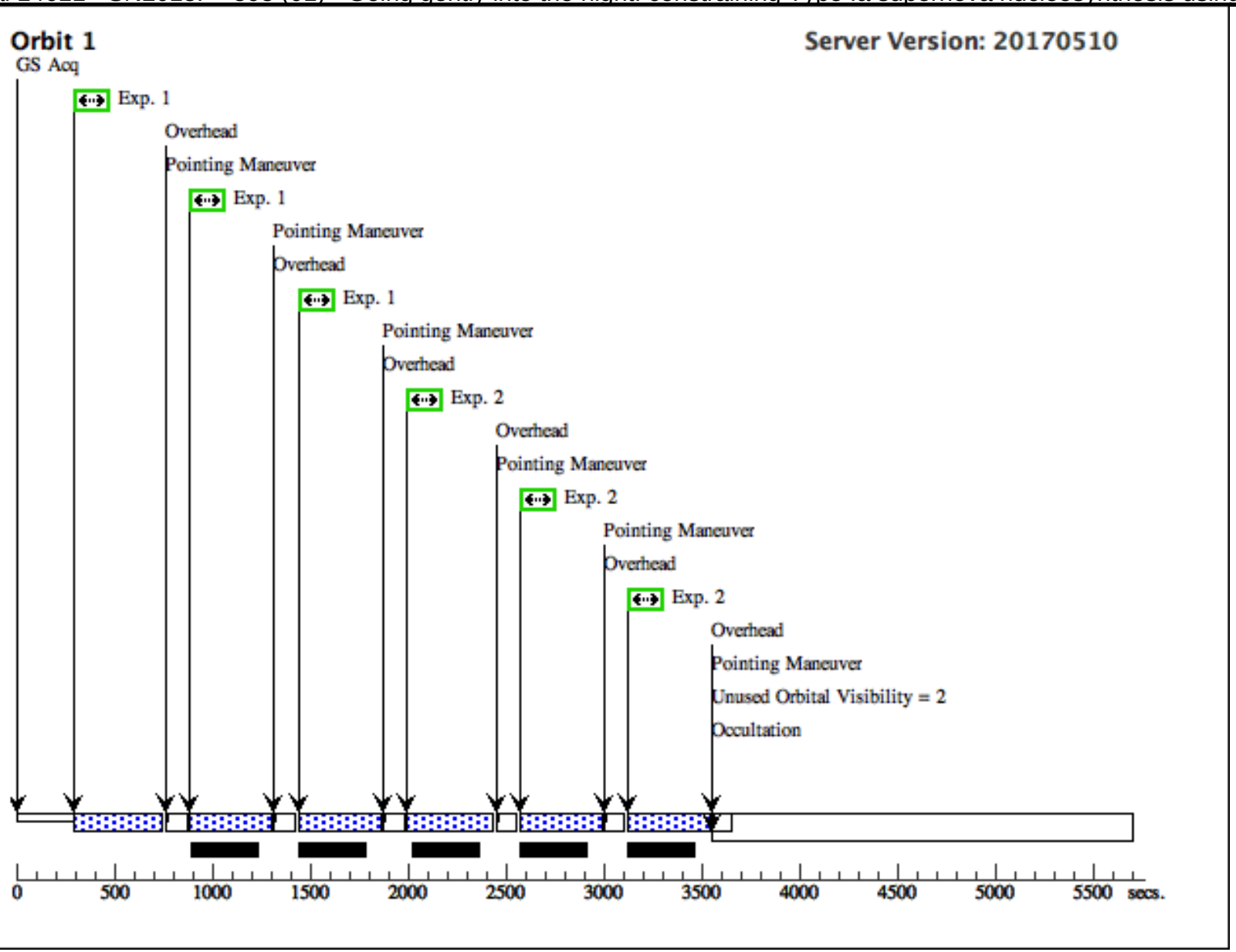
Fixed Targets

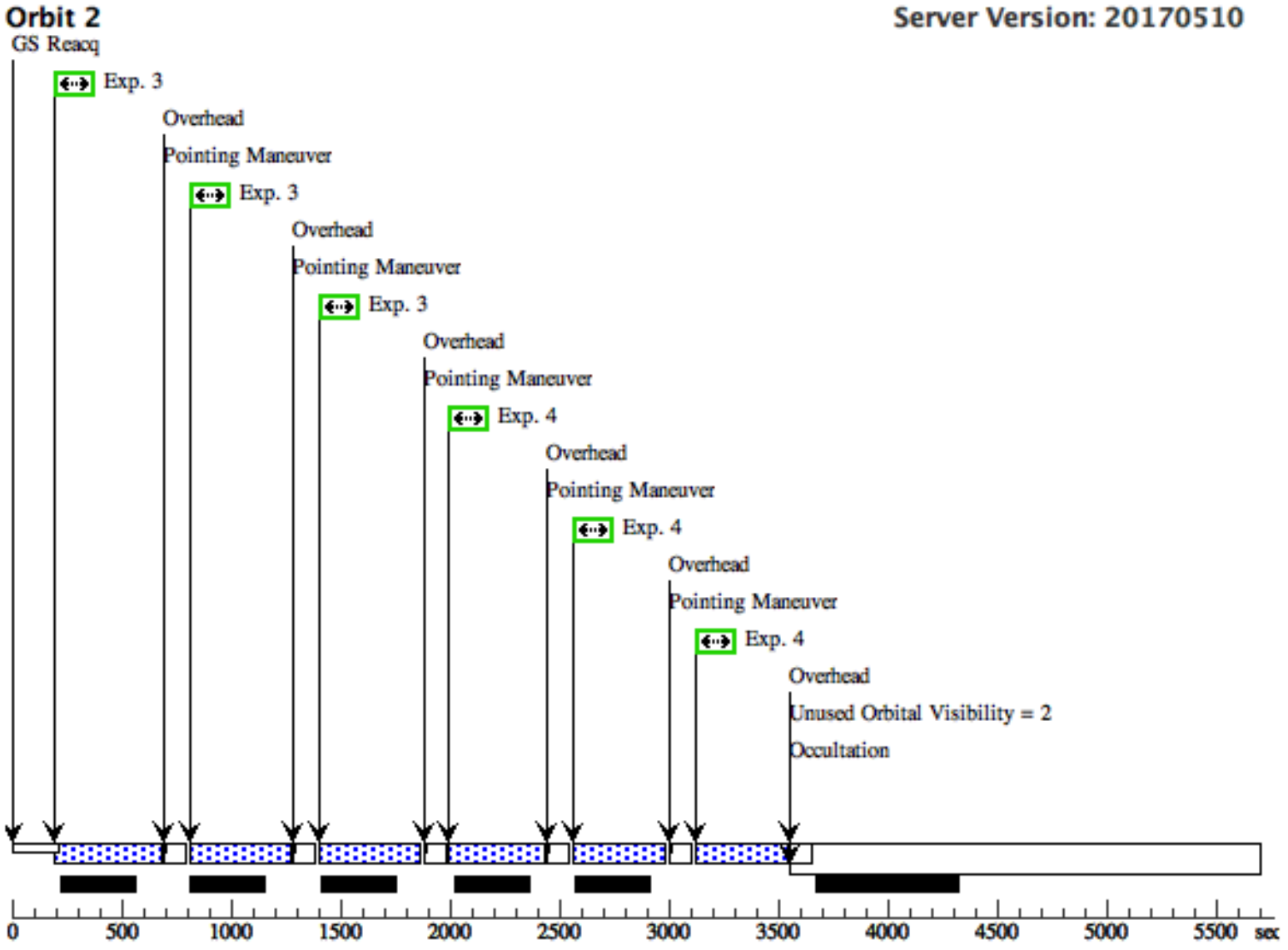
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	SN2015F	RA: 07 36 15.7600 (114.0656667d) Dec: -69 30 23.00 (-69.50639d) Equinox: J2000		V=23+/-0.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F438W	(1) SN2015F	WFC3/UVIS, ACCUM, UVIS2	F438W	FLASH=8		Pattern 1, Exps 1-1 in SN2015F +595 (01) (1)	422 Secs (1266 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***
2	F625W	(1) SN2015F	WFC3/UVIS, ACCUM, UVIS2	F625W			Pattern 1, Exps 2-2 in SN2015F +595 (01) (1)	422 Secs (1266 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***
3	F555W	(1) SN2015F	WFC3/UVIS, ACCUM, UVIS2	F555W			Pattern 1, Exps 3-3 in SN2015F +595 (01) (1)	465 Secs (1395 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[2]***
4	F814W	(1) SN2015F	WFC3/UVIS, ACCUM, UVIS2	F814W	FLASH=2		Pattern 1, Exps 4-4 in SN2015F +595 (01) (1)	422 Secs (1266 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[2]***

Orbit Structure




Orbit 2
Server Version: 20170510
GS Reacq
Exp. 3
Overhead
Pointing Maneuver
Exp. 3
Overhead
Pointing Maneuver
Exp. 3
Overhead
Pointing Maneuver
Exp. 4
Overhead
Pointing Maneuver
Exp. 4
Overhead
Pointing Maneuver
Exp. 4
Overhead
Unused Orbital Visibility = 2
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 14611, SN2015F +645 (02), completed Sat Jun 17 01:01:49 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: BETWEEN 25-DEC-2016:00:00:00 AND 09-JAN-2017:00:00:00

Comments: The second visit to SN2015F, this will be one orbit spent fully on F555W. However, if the previous visit revealed that the observations were background-limited, we will amend this (and subsequent) orbits to include more spectral elements.

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)

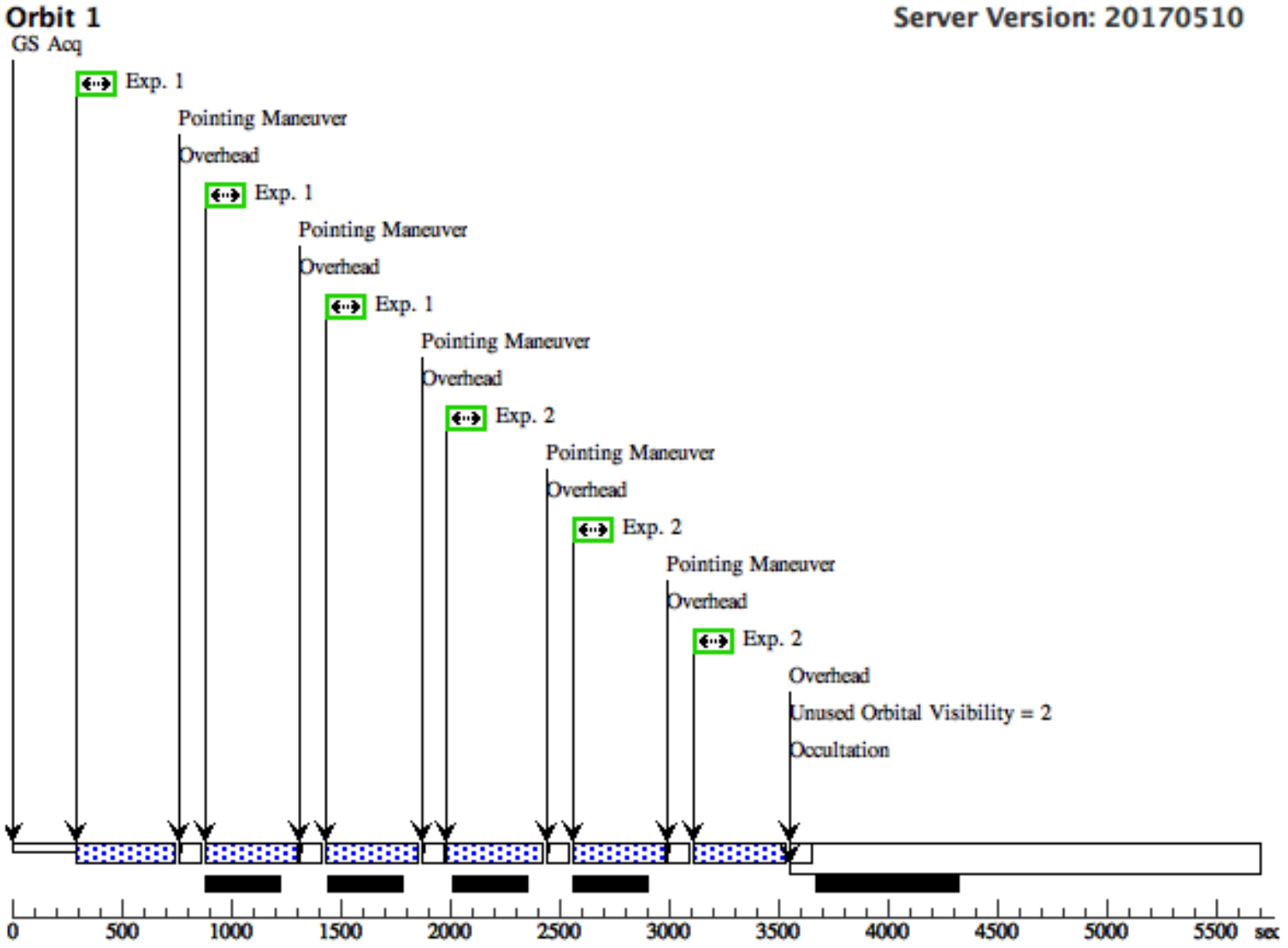
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	SN2015F	RA: 07 36 15.7600 (114.0656667d) Dec: -69 30 23.00 (-69.50639d) Equinox: J2000		V=23+/-0.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F555W	(1) SN2015F	WFC3/UVIS, ACCUM, UVIS2	F555W			Pattern 1, Exps 1-1 in SN2015F +645 (02) (1)	425 Secs (1275 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***
2	F814W	(1) SN2015F	WFC3/UVIS, ACCUM, UVIS2	F814W	FLASH=2		Pattern 1, Exps 2-2 in SN2015F +645 (02) (1)	425 Secs (1275 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***

Orbit Structure



Visit

Proposal 14611, SN2015F +695 (03), completed Sat Jun 17 01:01:49 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: BETWEEN 13-FEB-2017:00:00:00 AND 21-FEB-2017:00:00:00

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), (3), (4)

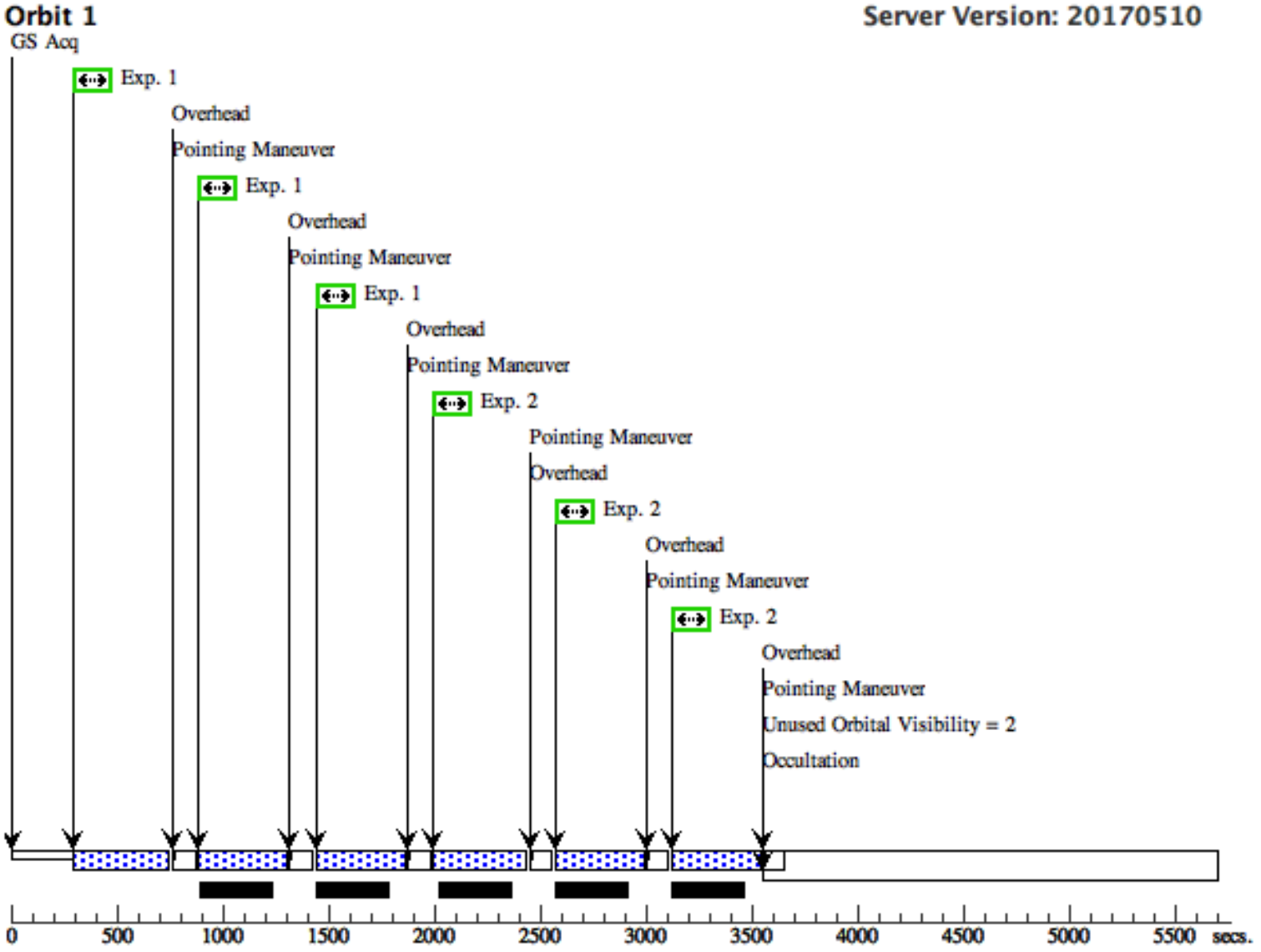
Fixed Targets

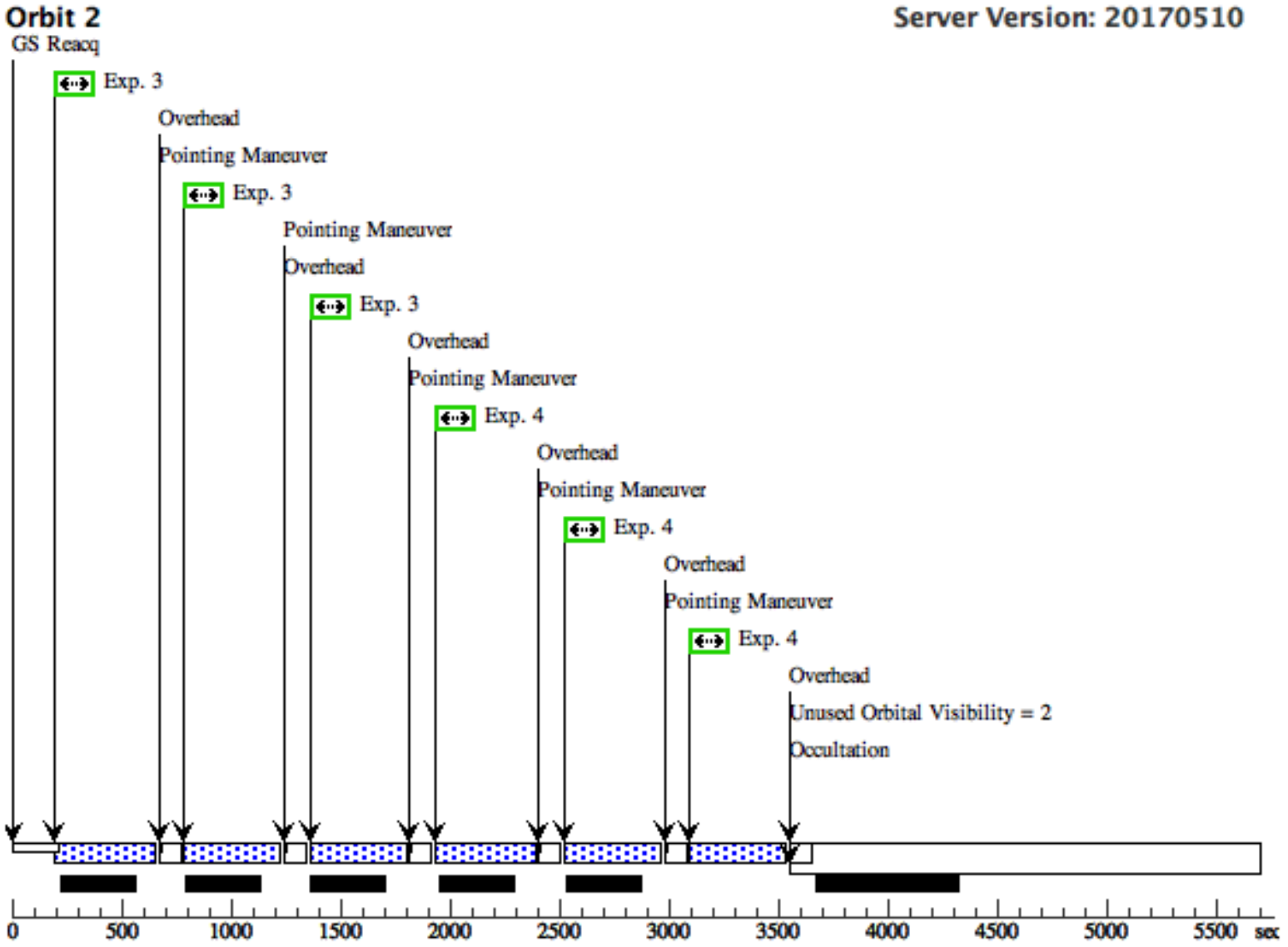
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	SN2015F	RA: 07 36 15.7600 (114.0656667d) Dec: -69 30 23.00 (-69.50639d) Equinox: J2000		V=23+/-0.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F438W	(1) SN2015F	WFC3/UVIS, ACCUM, UVIS2	F438W	FLASH=8		Pattern 1, Exps 1-1 in SN2015F +695 (03) (1)	422 Secs (1266 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***
2	F555W	(1) SN2015F	WFC3/UVIS, ACCUM, UVIS2	F555W			Pattern 1, Exps 2-2 in SN2015F +695 (03) (1)	422 Secs (1266 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***
3	F625W	(1) SN2015F	WFC3/UVIS, ACCUM, UVIS2	F625W			Pattern 1, Exps 3-3 in SN2015F +695 (03) (1)	443 Secs (1329 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[2]***
4	F814W	(1) SN2015F	WFC3/UVIS, ACCUM, UVIS2	F814W	FLASH=2		Pattern 1, Exps 4-4 in SN2015F +695 (03) (1)	443 Secs (1329 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[2]***

Orbit Structure




Orbit 2
Server Version: 20170510
GS Reacq
Exp. 3
Overhead
Pointing Maneuver
Exp. 3
Pointing Maneuver
Overhead
Exp. 3
Overhead
Pointing Maneuver
Exp. 4
Overhead
Pointing Maneuver
Exp. 4
Overhead
Pointing Maneuver
Exp. 4
Overhead
Unused Orbital Visibility = 2
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 14611, SN2015F +748 (04), completed Sat Jun 17 01:01:49 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: BETWEEN 08-APR-2017:00:00:00 AND 13-APR-2017:00:00:00

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)

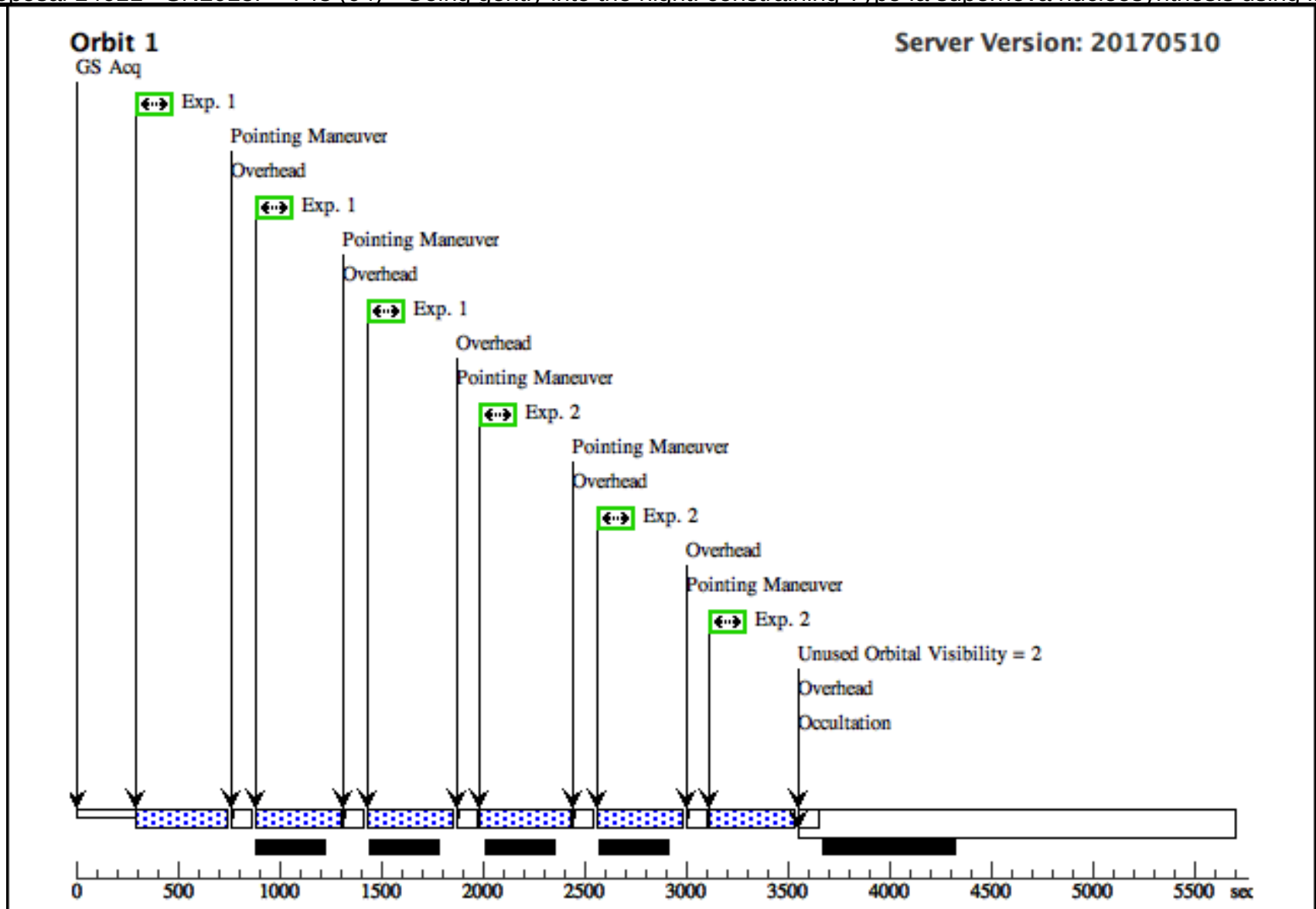
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	SN2015F	RA: 07 36 15.7600 (114.0656667d) Dec: -69 30 23.00 (-69.50639d) Equinox: J2000		V=23+/-0.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F555W	(1) SN2015F	WFC3/UVIS, ACCUM, UVIS2	F555W			Pattern 1, Exps 1-1 in SN2015F +748 (04) (1)	425 Secs (1275 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***
2	F625W	(1) SN2015F	WFC3/UVIS, ACCUM, UVIS2	F625W			Pattern 1, Exps 2-2 in SN2015F +748 (04) (1)	425 Secs (1275 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***

Orbit Structure



Visit

Proposal 14611, SN2015F +770 (05), completed Sat Jun 17 01:01:49 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: BETWEEN 02-MAY-2017:00:00:00 AND 05-MAY-2017:00:00:00

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), (3), (4)

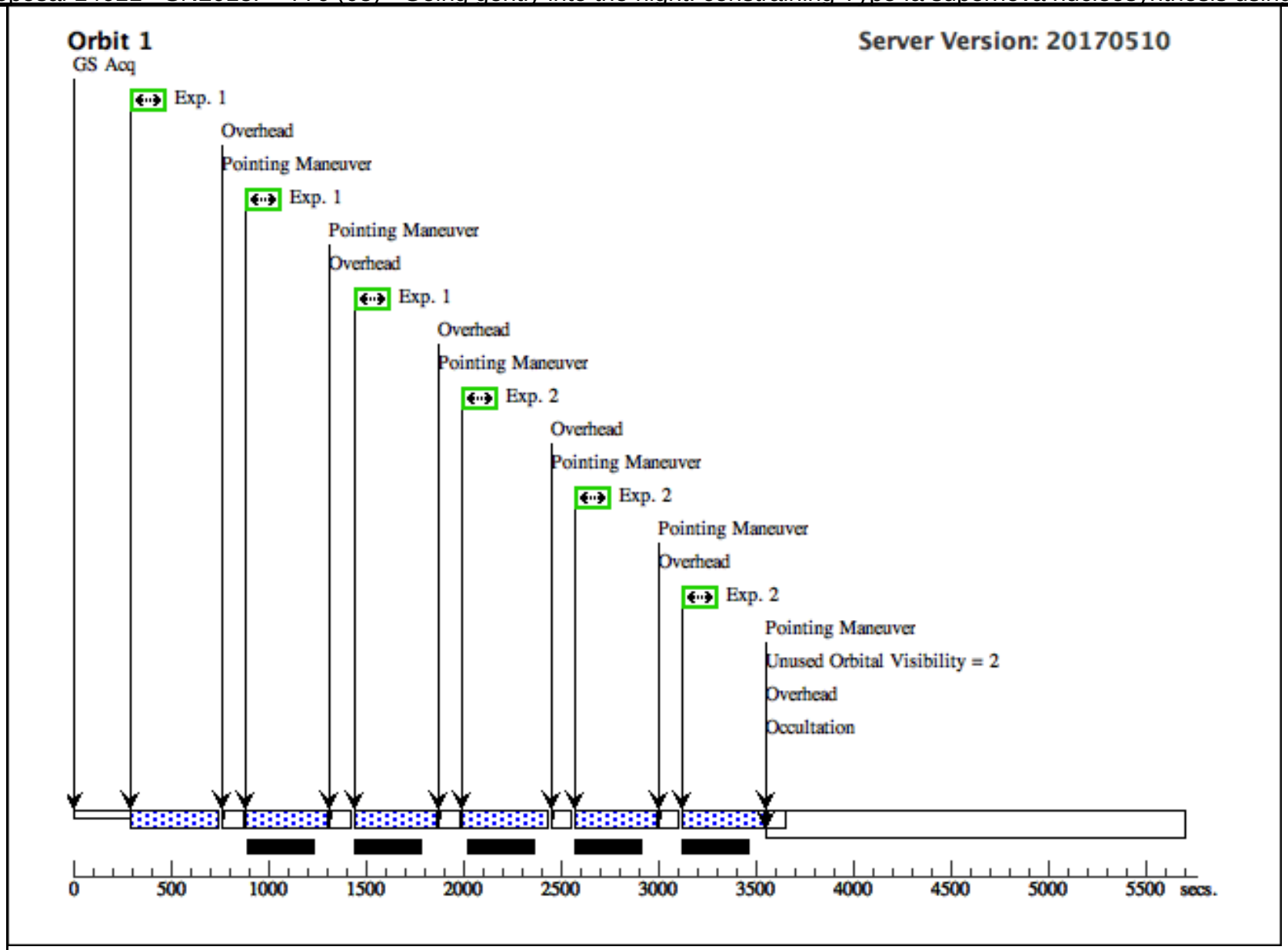
Fixed Targets

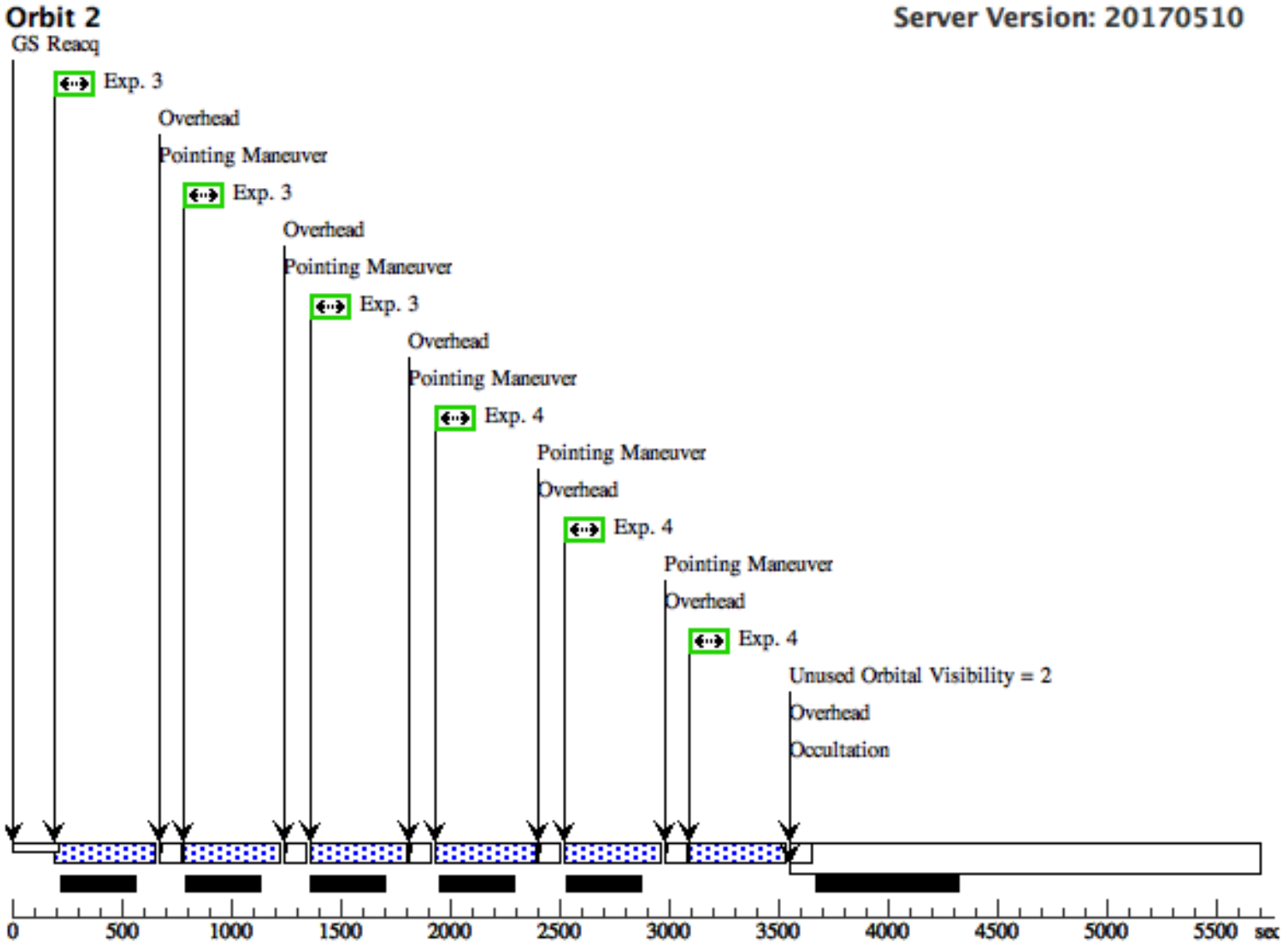
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	SN2015F	RA: 07 36 15.7600 (114.0656667d) Dec: -69 30 23.00 (-69.50639d) Equinox: J2000		V=23+/-0.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F438W	(1) SN2015F	WFC3/UVIS, ACCUM, UVIS2	F438W	FLASH=8		Pattern 1, Exps 1-1 in SN2015F +770 (05) (1)	422 Secs (1266 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***
2	F555W	(1) SN2015F	WFC3/UVIS, ACCUM, UVIS2	F555W			Pattern 1, Exps 2-2 in SN2015F +770 (05) (1)	422 Secs (1266 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***
3	F625W	(1) SN2015F	WFC3/UVIS, ACCUM, UVIS2	F625W			Pattern 1, Exps 3-3 in SN2015F +770 (05) (1)	443 Secs (1329 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[2]***
4	F814W	(1) SN2015F	WFC3/UVIS, ACCUM, UVIS2	F814W	FLASH=2		Pattern 1, Exps 4-4 in SN2015F +770 (05) (1)	443 Secs (1329 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[2]***

Orbit Structure




Orbit 2
Server Version: 20170510
GS Reacq
Exp. 3
Overhead
Pointing Maneuver
Exp. 3
Overhead
Pointing Maneuver
Exp. 3
Overhead
Pointing Maneuver
Exp. 4
Pointing Maneuver
Overhead
Exp. 4
Pointing Maneuver
Overhead
Exp. 4
Unused Orbital Visibility = 2
Overhead
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 14611, SN2015F +821 (06), scheduled Sat Jun 17 01:01:49 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: BETWEEN 18-JUN-2017:00:00:00 AND 28-JUN-2017:00:00:00

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)

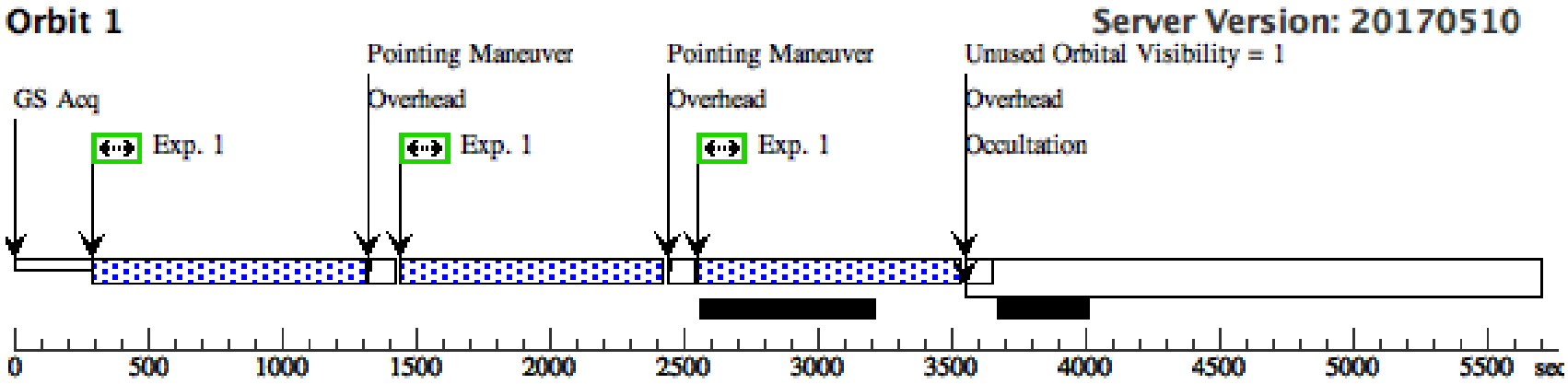
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	SN2015F	RA: 07 36 15.7600 (114.0656667d) Dec: -69 30 23.00 (-69.50639d) Equinox: J2000		V=23+/-0.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F555W	(1) SN2015F	WFC3/UVIS, ACCUM, UVIS2	F555W			Pattern 1, Exps 1-1 in SN2015F +821 (06) (1)	986 Secs (2958 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***

Orbit Structure



Visit

Proposal 14611, SN2015F +870 (07), implementation Sat Jun 17 01:01:49 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: BETWEEN 06-AUG-2017:00:00:00 AND 14-AUG-2017:00:00:00

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), (3), (4)

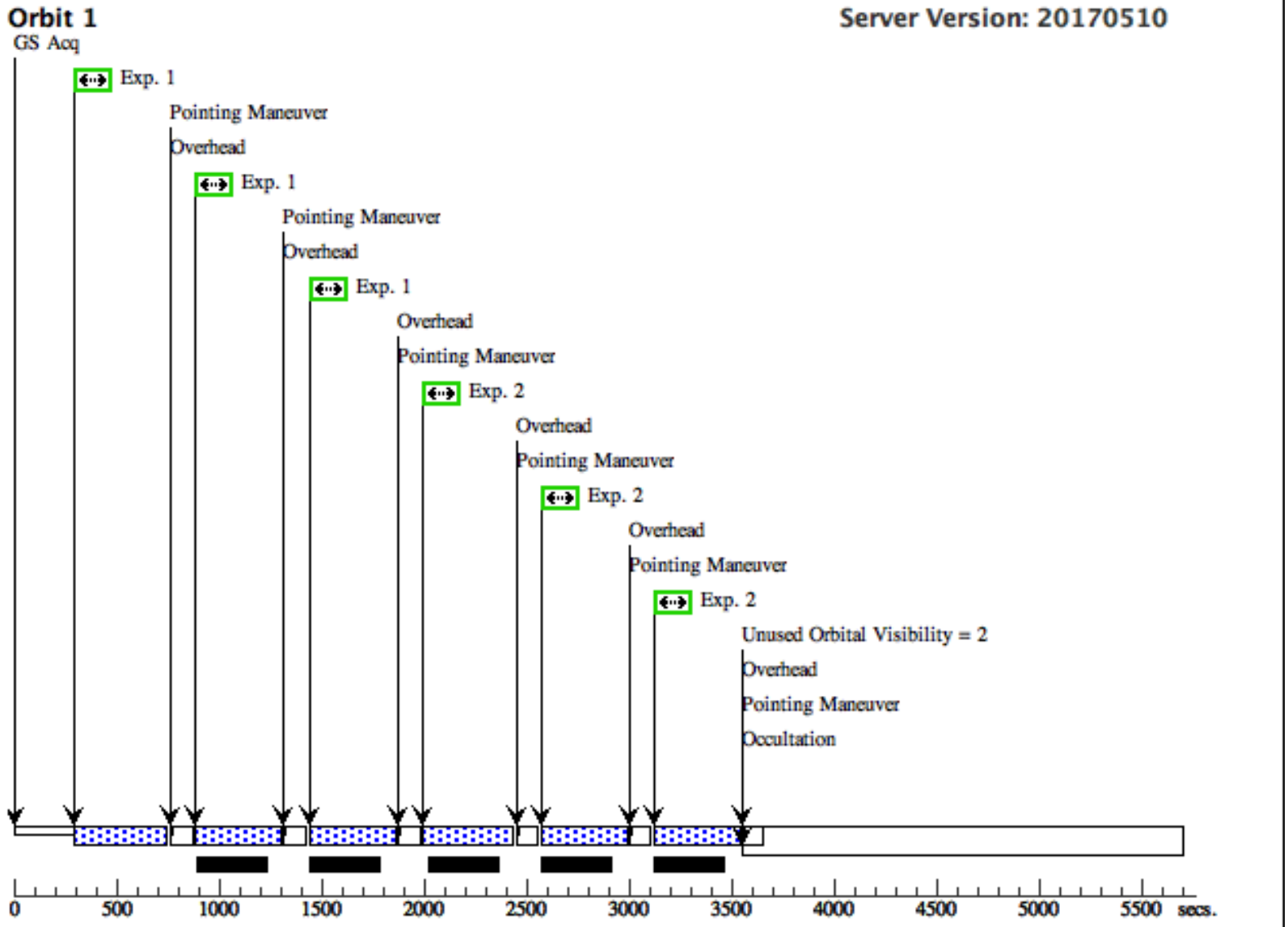
Fixed Targets

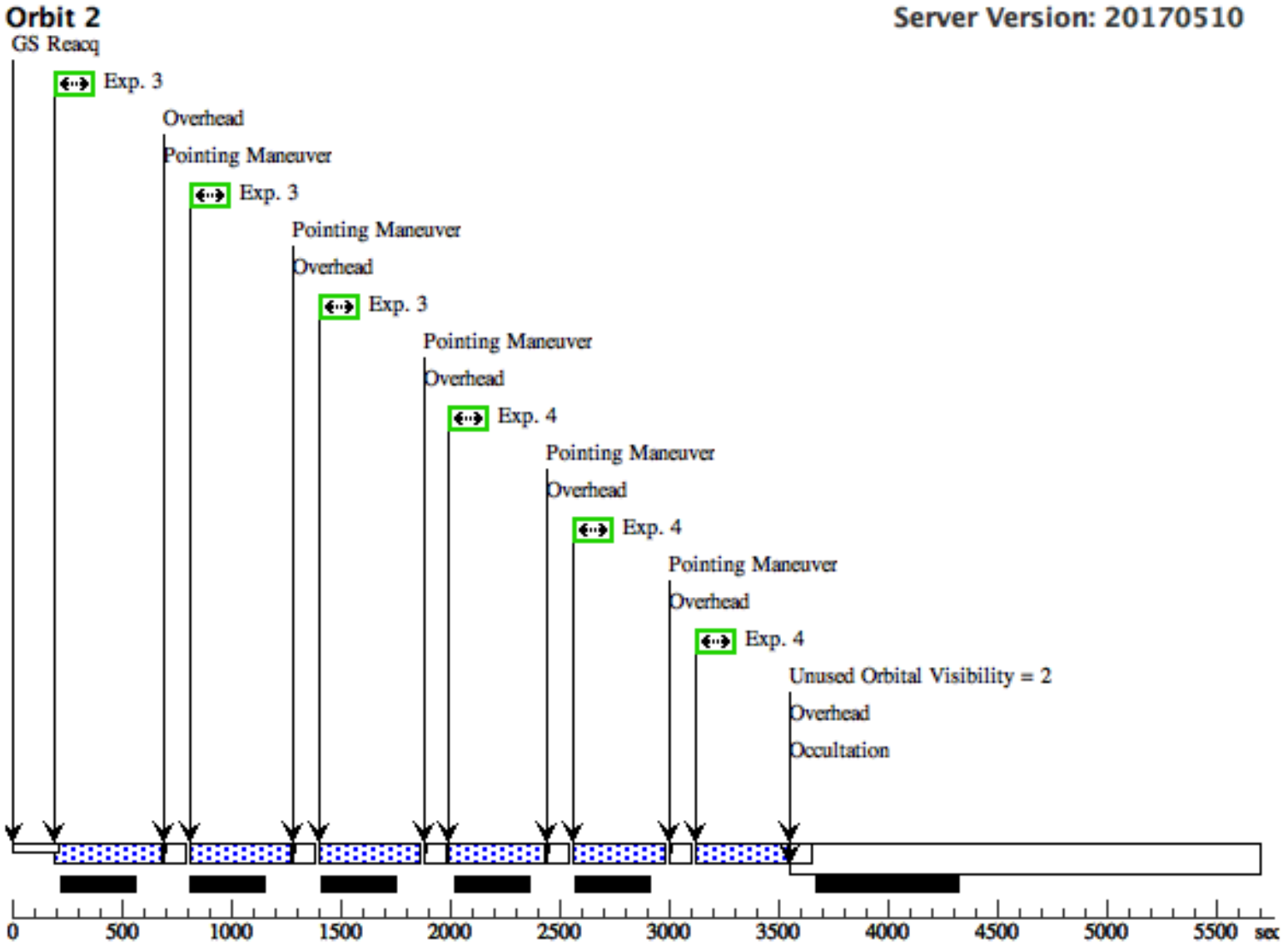
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	SN2015F	RA: 07 36 15.7600 (114.0656667d) Dec: -69 30 23.00 (-69.50639d) Equinox: J2000		V=23+/-0.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F438W	(1) SN2015F	WFC3/UVIS, ACCUM, UVIS2	F438W	FLASH=8		Pattern 1, Exps 1-1 in SN2015F +870 (07) (1)	422 Secs (1266 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***
2	F625W	(1) SN2015F	WFC3/UVIS, ACCUM, UVIS2	F625W			Pattern 1, Exps 2-2 in SN2015F +870 (07) (1)	422 Secs (1266 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***
3	F555W	(1) SN2015F	WFC3/UVIS, ACCUM, UVIS2	F555W			Pattern 1, Exps 3-3 in SN2015F +870 (07) (1)	465 Secs (1395 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[2]***
4	F814W	(1) SN2015F	WFC3/UVIS, ACCUM, UVIS2	F814W	FLASH=2		Pattern 1, Exps 4-4 in SN2015F +870 (07) (1)	422 Secs (1266 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[2]***

Orbit Structure




Orbit 2
Server Version: 20170510
GS Reacq
Exp. 3
Overhead
Pointing Maneuver
Exp. 3
Pointing Maneuver
Overhead
Exp. 3
Pointing Maneuver
Overhead
Exp. 4
Pointing Maneuver
Overhead
Exp. 4
Pointing Maneuver
Overhead
Exp. 4
Unused Orbital Visibility = 2
Overhead
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 14611, SN2015F +922 (08), implementation Sat Jun 17 01:01:49 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: BETWEEN 28-SEP-2017:00:00:00 AND 05-OCT-2017:00:00:00

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)

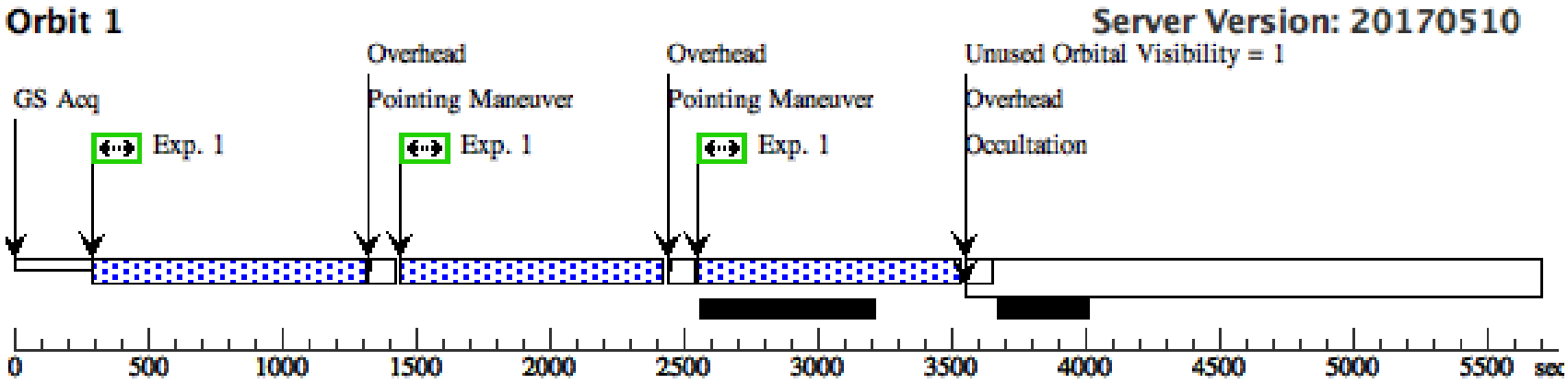
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	SN2015F	RA: 07 36 15.7600 (114.0656667d) Dec: -69 30 23.00 (-69.50639d) Equinox: J2000		V=23+/-0.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F555W	(1) SN2015F	WFC3/UVIS, ACCUM, UVIS2	F555W			Pattern 1, Exps 1-1 in SN2015F +922 (08) (1)	986 Secs (2958 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***

Orbit Structure



Visit

Proposal 14611, ASASSN-14lp +850 (09), completed Sat Jun 17 01:01:49 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: BETWEEN 20-APR-2017:00:00:00 AND 26-APR-2017:00:00:00

Comments: The first visit to ASASSN-14lp. We'll take images in F438W, F555W, F625W, and F814W. This initial observation will test whether the images are background limited in any of these filters. The results of this test will then decide whether, in following visits, we'll make changes to filters and exposure times.

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), (3), (4)

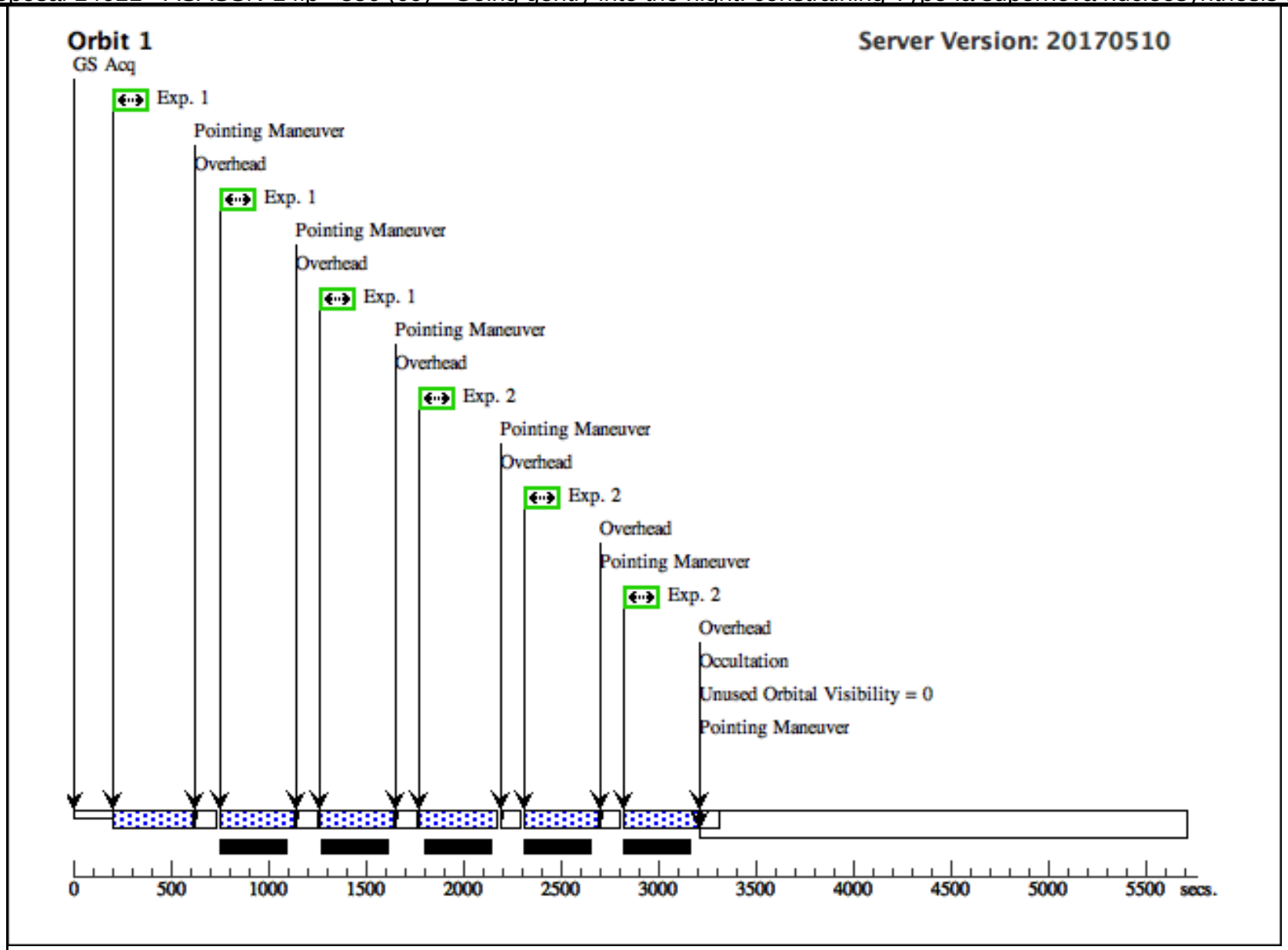
Fixed Targets

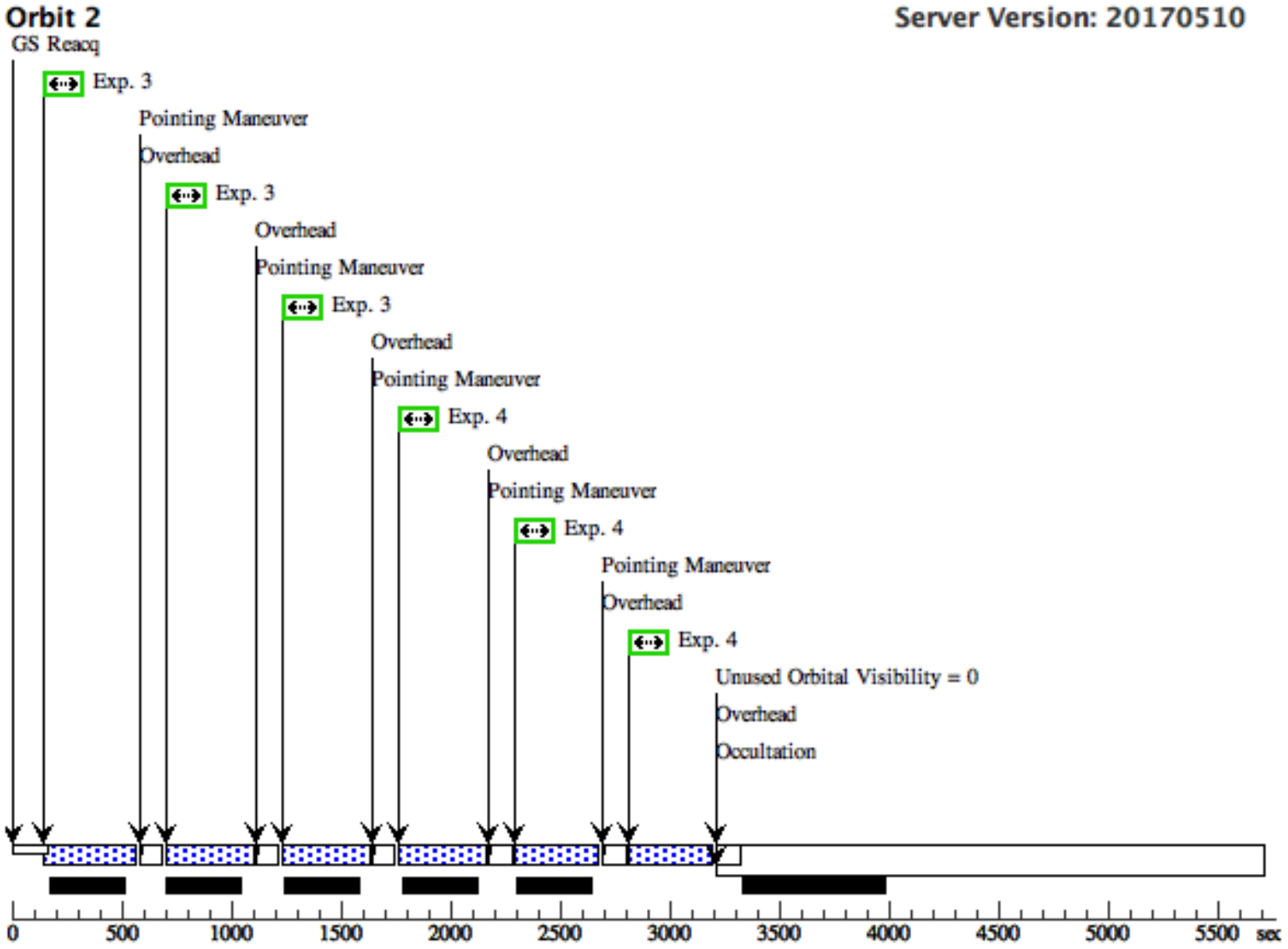
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	ASASSN-14LP	RA: 12 45 9.1000 (191.2879167d) Dec: -00 27 32.50 (-.45903d) Equinox: J2000		V=25+/-0.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F438W	(2) ASASSN-14LP	WFC3/UVIS, ACCUM, UVIS2	F438W	FLASH=8	GS ACQ SCENARIO SINGLE	Pattern 1, Exps 1-1 in ASASSN-14lp +850 (09) (1)	380 Secs (1140 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***
2	F625W	(2) ASASSN-14LP	WFC3/UVIS, ACCUM, UVIS2	F625W	FLASH=1		Pattern 1, Exps 2-2 in ASASSN-14lp +850 (09) (1)	378 Secs (1134 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***
3	F555W	(2) ASASSN-14LP	WFC3/UVIS, ACCUM, UVIS2	F555W	FLASH=1		Pattern 1, Exps 3-3 in ASASSN-14lp +850 (09) (1)	400 Secs (1200 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[2]***
4	F814W	(2) ASASSN-14LP	WFC3/UVIS, ACCUM, UVIS2	F814W	FLASH=3		Pattern 1, Exps 4-4 in ASASSN-14lp +850 (09) (1)	384 Secs (1152 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[2]***

Orbit Structure




Orbit 2
Server Version: 20170510
GS Reacq
Exp. 3
Pointing Maneuver
Overhead
Exp. 3
Overhead
Pointing Maneuver
Exp. 3
Overhead
Pointing Maneuver
Exp. 4
Overhead
Pointing Maneuver
Exp. 4
Pointing Maneuver
Overhead
Exp. 4
Unused Orbital Visibility = 0
Overhead
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 14611, ASASSN-14lp +877 (10), completed Sat Jun 17 01:01:49 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: BETWEEN 17-MAY-2017:00:00:00 AND 23-MAY-2017:00:00:00

Comments: The second visit to ASASSN-14lp, this will be one orbit spent fully on F555W. However, if the previous visit revealed that the observations were background-limited, we will amend this (and subsequent) orbits to include more spectral elements.

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)

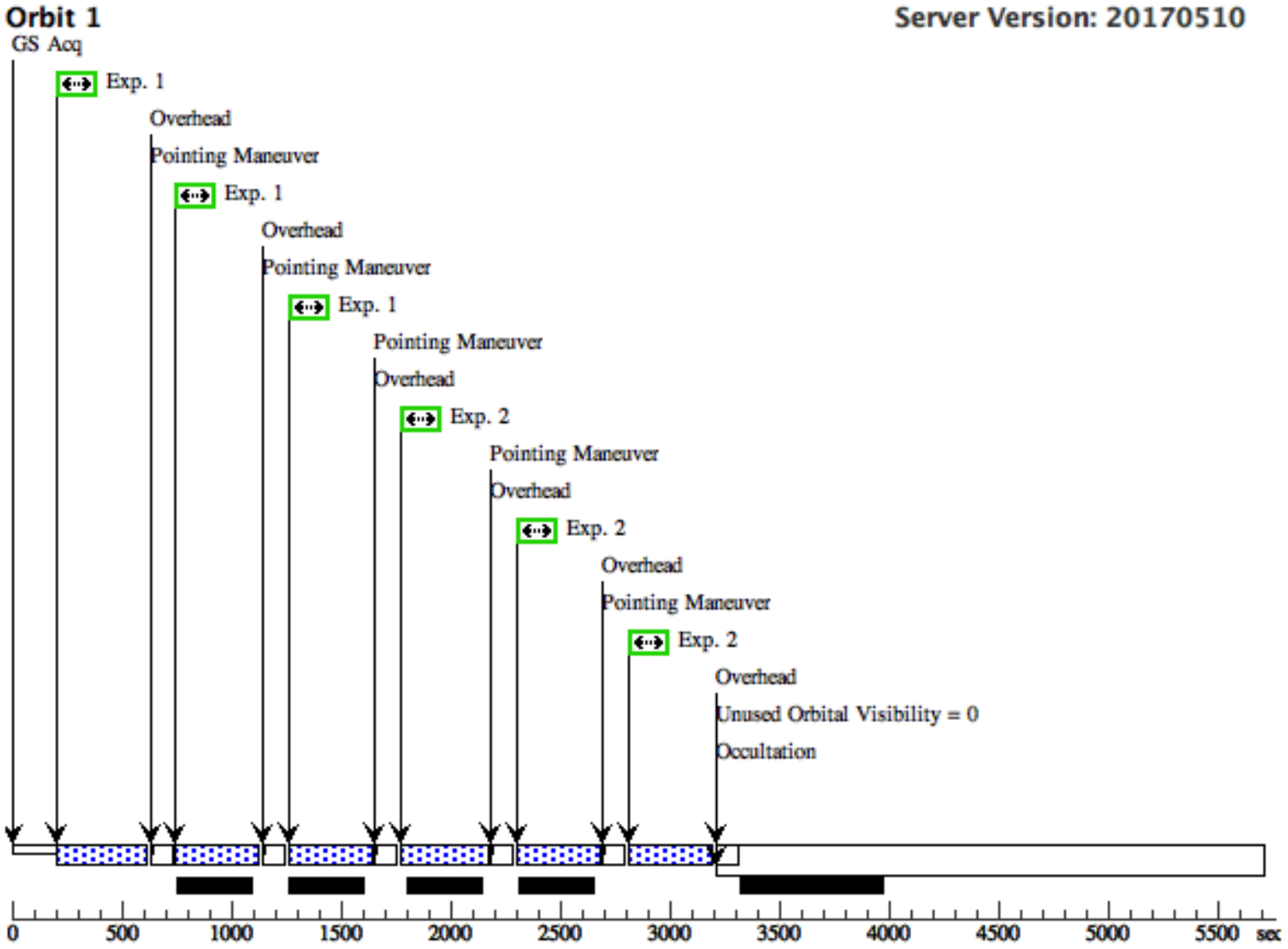
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	ASASSN-14LP	RA: 12 45 9.1000 (191.2879167d) Dec: -00 27 32.50 (-.45903d) Equinox: J2000		V=25+/-0.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F555W	(2) ASASSN-14LP	WFC3/UVIS, ACCUM, UVIS2	F555W	FLASH=1	GS ACQ SCENARIO SINGLE	Pattern 1, Exps 1-1 in ASASSN-14lp +877 (10) (1)	381 Secs (1143 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***
2	F625W	(2) ASASSN-14LP	WFC3/UVIS, ACCUM, UVIS2	F625W	FLASH=1		Pattern 1, Exps 2-2 in ASASSN-14lp +877 (10) (1)	380 Secs (1140 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***

Orbit Structure



Visit

Proposal 14611, ASASSN-14lp +904 (11), completed Sat Jun 17 01:01:49 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: BETWEEN 13-JUN-2017:00:00:00 AND 19-JUN-2017:00:00:00

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), (3), (4)

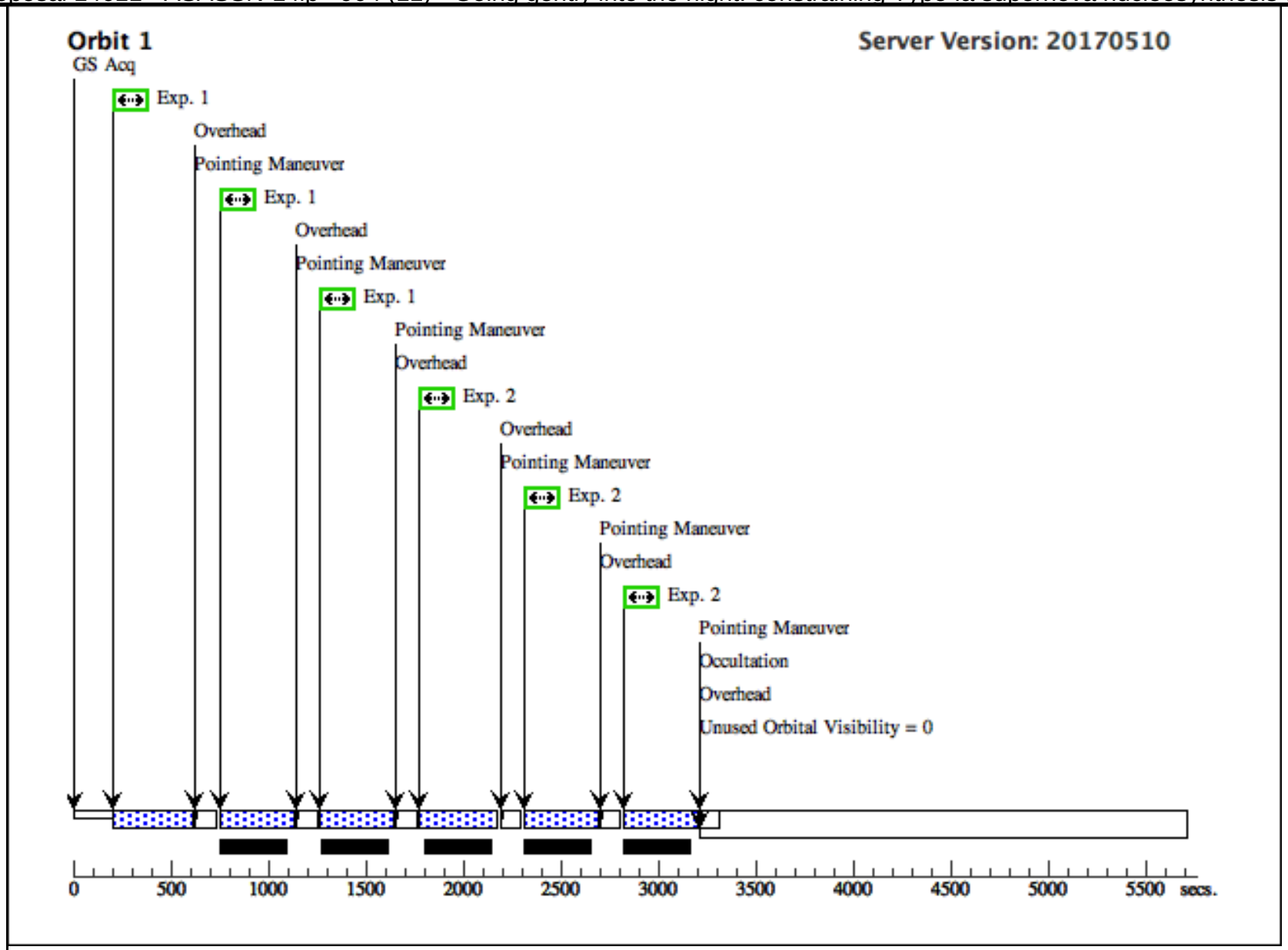
Fixed Targets

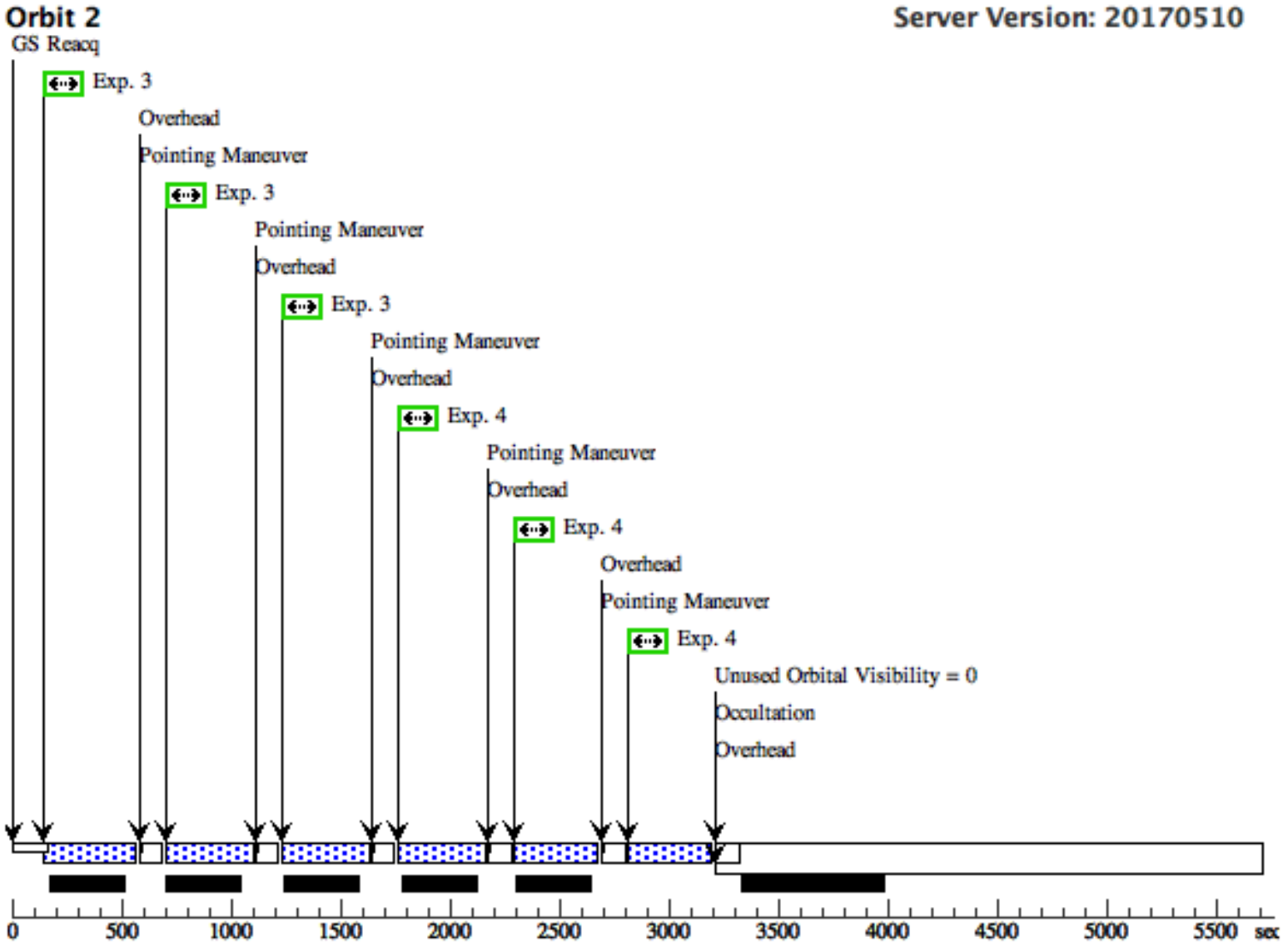
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	ASASSN-14LP	RA: 12 45 9.1000 (191.2879167d) Dec: -00 27 32.50 (-.45903d) Equinox: J2000		V=25+/-0.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F438W	(2) ASASSN-14LP	WFC3/UVIS, ACCUM, UVIS2	F438W	FLASH=8	GS ACQ SCENARIO SINGLE	Pattern 1, Exps 1-1 in ASASSN-14lp +904 (11) (1)	380 Secs (1140 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***
2	F625W	(2) ASASSN-14LP	WFC3/UVIS, ACCUM, UVIS2	F625W	FLASH=1		Pattern 1, Exps 2-2 in ASASSN-14lp +904 (11) (1)	378 Secs (1134 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***
3	F555W	(2) ASASSN-14LP	WFC3/UVIS, ACCUM, UVIS2	F555W	FLASH=1		Pattern 1, Exps 3-3 in ASASSN-14lp +904 (11) (1)	400 Secs (1200 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[2]***
4	F814W	(2) ASASSN-14LP	WFC3/UVIS, ACCUM, UVIS2	F814W	FLASH=3		Pattern 1, Exps 4-4 in ASASSN-14lp +904 (11) (1)	384 Secs (1152 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[2]***

Orbit Structure




Orbit 2
Server Version: 20170510
GS Reacq
Exp. 3
Overhead
Pointing Maneuver
Exp. 3
Pointing Maneuver
Overhead
Exp. 3
Pointing Maneuver
Overhead
Exp. 4
Pointing Maneuver
Overhead
Exp. 4
Overhead
Pointing Maneuver
Exp. 4
Unused Orbital Visibility = 0
Occultation
Overhead
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 14611, ASASSN-14lp +931 (12), implementation Sat Jun 17 01:01:49 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: BETWEEN 10-JUL-2017:00:00:00 AND 16-JUL-2017:00:00:00

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)

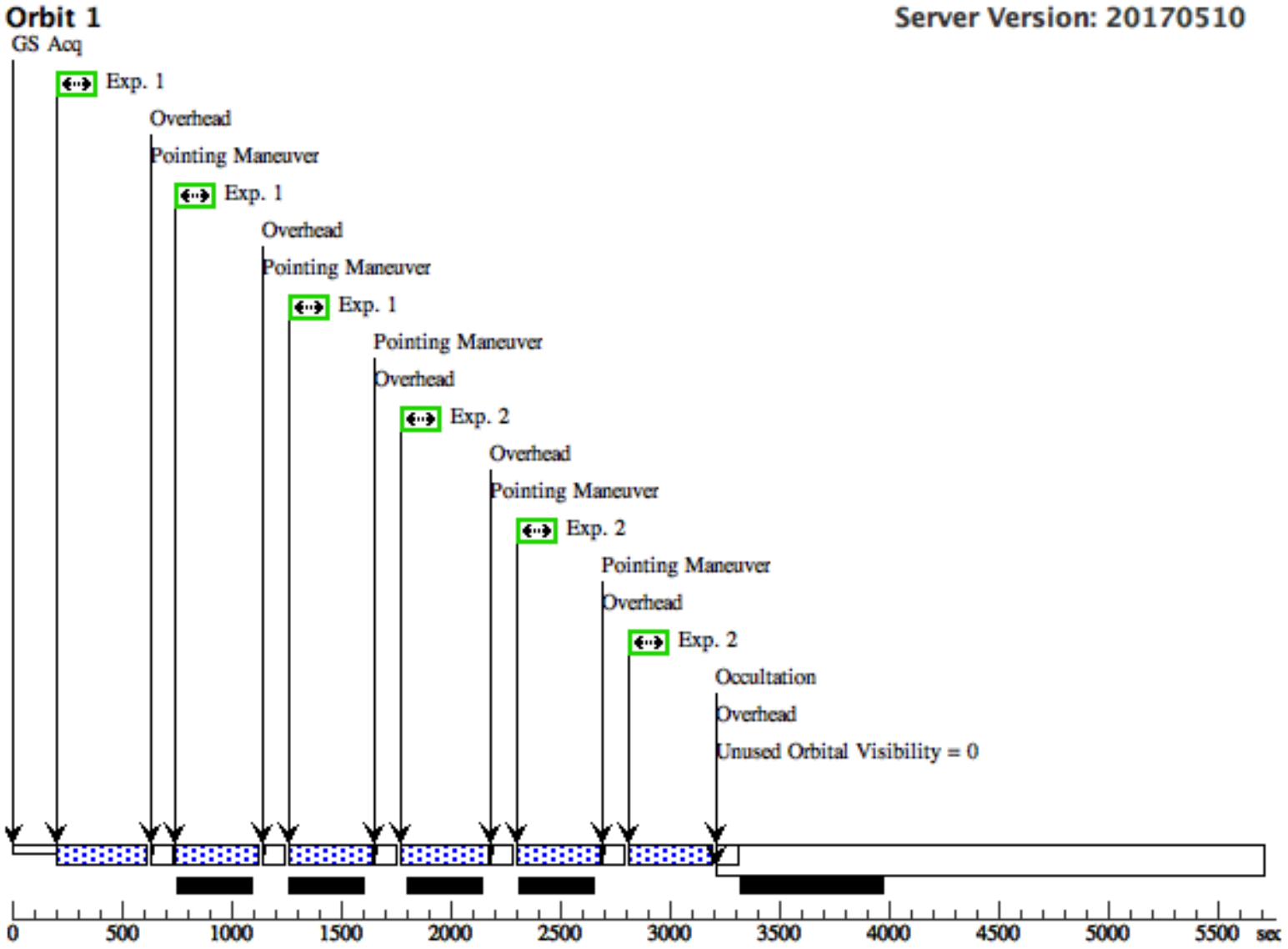
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	ASASSN-14LP	RA: 12 45 9.1000 (191.2879167d) Dec: -00 27 32.50 (-.45903d) Equinox: J2000		V=25+/-0.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F555W	(2) ASASSN-14LP	WFC3/UVIS, ACCUM, UVIS2	F555W	FLASH=1	GS ACQ SCENARIO SINGLE	Pattern 1, Exps 1-1 in ASASSN-14lp +931 (12) (1)	381 Secs (1143 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***
2	F625W	(2) ASASSN-14LP	WFC3/UVIS, ACCUM, UVIS2	F625W	FLASH=1		Pattern 1, Exps 2-2 in ASASSN-14lp +931 (12) (1)	380 Secs (1140 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***

Orbit Structure



Visit

Proposal 14611, ASASSN-14lp +958 (13), implementation Sat Jun 17 01:01:49 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: BETWEEN 06-AUG-2017:00:00:00 AND 12-AUG-2017:00:00:00

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), (3), (4)

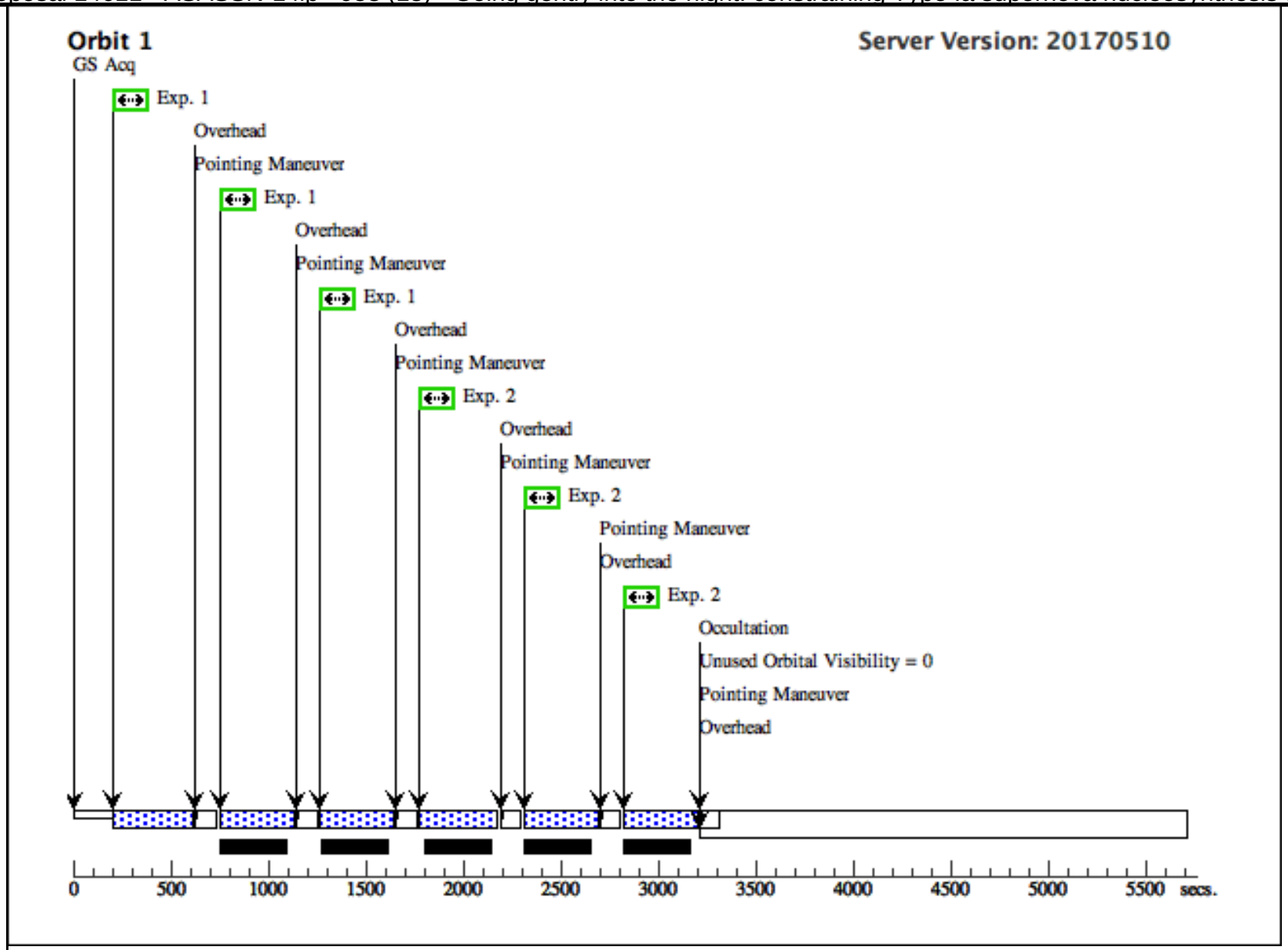
Fixed Targets

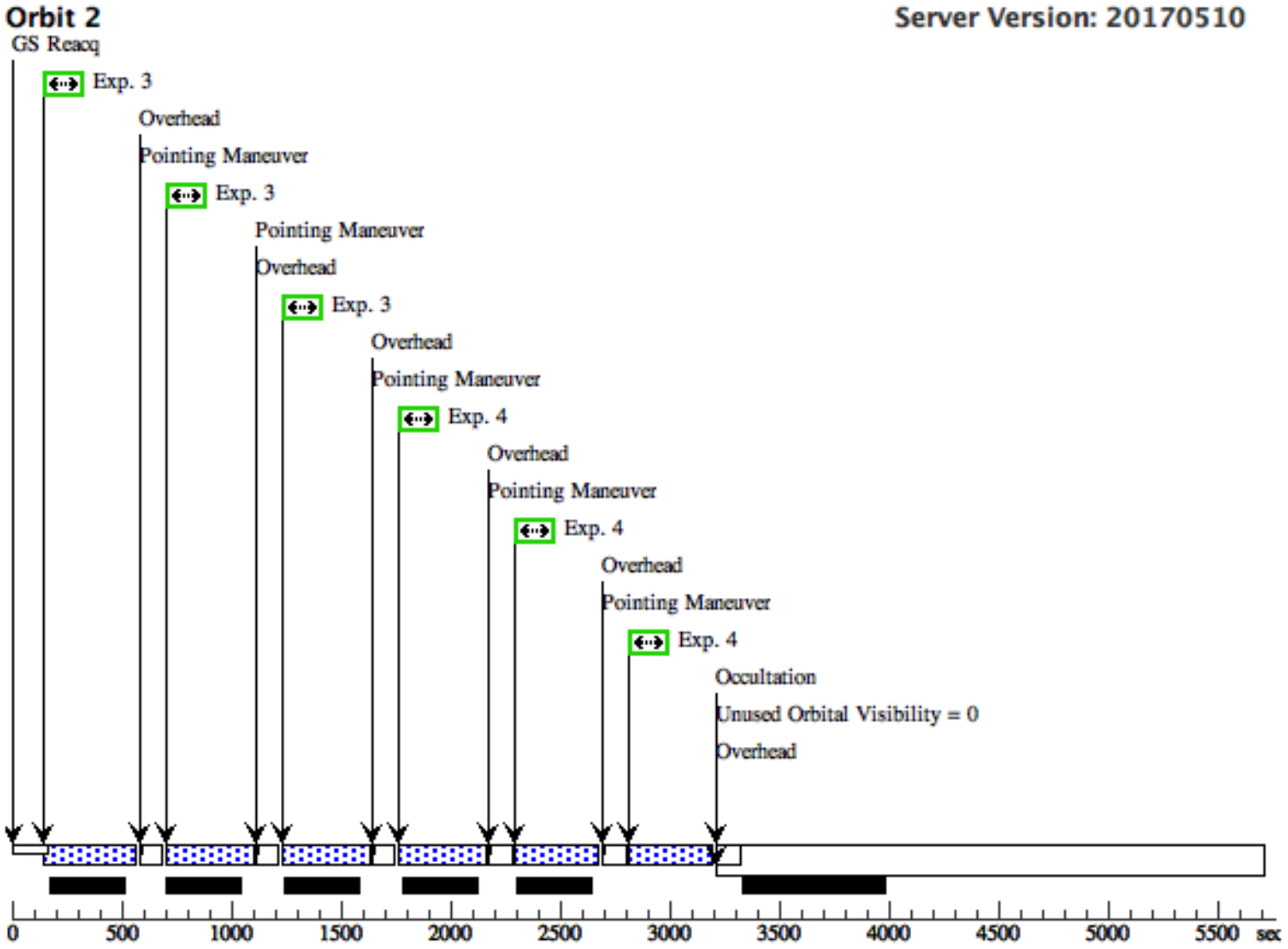
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	ASASSN-14LP	RA: 12 45 9.1000 (191.2879167d) Dec: -00 27 32.50 (-.45903d) Equinox: J2000		V=25+/-0.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F438W	(2) ASASSN-14LP	WFC3/UVIS, ACCUM, UVIS2	F438W	FLASH=8	GS ACQ SCENARIO SINGLE	Pattern 1, Exps 1-1 in ASASSN-14lp +958 (13) (1)	380 Secs (1140 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***
2	F625W	(2) ASASSN-14LP	WFC3/UVIS, ACCUM, UVIS2	F625W	FLASH=1		Pattern 1, Exps 2-2 in ASASSN-14lp +958 (13) (1)	378 Secs (1134 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***
3	F555W	(2) ASASSN-14LP	WFC3/UVIS, ACCUM, UVIS2	F555W	FLASH=1		Pattern 1, Exps 3-3 in ASASSN-14lp +958 (13) (1)	400 Secs (1200 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[2]***
4	F814W	(2) ASASSN-14LP	WFC3/UVIS, ACCUM, UVIS2	F814W	FLASH=3		Pattern 1, Exps 4-4 in ASASSN-14lp +958 (13) (1)	384 Secs (1152 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[2]***

Orbit Structure




Orbit 2
Server Version: 20170510
GS Reacq
Exp. 3
Overhead
Pointing Maneuver
Exp. 3
Pointing Maneuver
Overhead
Exp. 3
Overhead
Pointing Maneuver
Exp. 4
Overhead
Pointing Maneuver
Exp. 4
Overhead
Pointing Maneuver
Exp. 4
Occultation
Unused Orbital Visibility = 0
Overhead
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 14611, SN 2015F (06A) (14) Sat Jun 17 01:01:49 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: AFTER 06 BY 0 D TO 30 D

Comments: This is the additional orbit approved by the TTRB, to make up for not splitting visit 06 between F555W and F625W.

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)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	SN2015F	RA: 07 36 15.7600 (114.0656667d) Dec: -69 30 23.00 (-69.50639d) Equinox: J2000		V=23+/-0.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F625W	(1) SN2015F	WFC3/UVIS, ACCUM, UVIS2	F625W			Pattern 1, Exps 1-1 in SN 2015F (06A) (14) (1)	900 Secs (2700 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	*[1]*

Orbit Structure