13458 - Detecting Isolated Black Holes through Astrometric Microlensing

Cycle: 21, 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	(7) MOA-2009-BLG-260	WFC3/UVIS	1	08-Oct-2014 21:01:03.0	yes
02	(4) OGLE-2011-BLG-462	WFC3/UVIS	1	08-Oct-2014 21:01:05.0	yes
03	(5) MOA-2010-BLG-364	WFC3/UVIS	1	08-Oct-2014 21:01:08.0	yes
04	(3) OGLE-2011-BLG-310	WFC3/UVIS	1	08-Oct-2014 21:01:10.0	yes
05	(8) OGLE-2011-BLG-0037	WFC3/UVIS	1	08-Oct-2014 21:01:12.0	yes
06	(4) OGLE-2011-BLG-462	WFC3/UVIS	1	08-Oct-2014 21:01:14.0	yes
07	(8) OGLE-2011-BLG-0037	WFC3/UVIS	1	08-Oct-2014 21:01:17.0	yes
08	(3) OGLE-2011-BLG-310	WFC3/UVIS	1	08-Oct-2014 21:01:19.0	yes

8 Total Orbits Used

ABSTRACT

A significant fraction of the mass of an old stellar population should be in the form of non-luminous, isolated black holes (BHs). Yet there has never been a unambiguous detection of a solitary BH---not surprisingly, since the expected accretion rate from the ISM is extremely low, and thus they emit essentially no radiation.

The only technique available to detect such isolated BHs is astrometric microlensing---the relativistic deflection of light from background stars. HST is the only instrument currently capable of detecting such tiny deflections.

We have underway a multi-year program of HST high-precision astrometry of long-duration microlensing events in the Galactic bulge, using the WFC3 camera. Our aim is the first detection of stellar-mass black holes, by monitoring five optimally selected events.

Our program has met with success, with clear detections of motions during microlensing, indicative of non-luminous massive lenses. However, proper motions of the stars in the Galactic bulge can be of similar magnitude as the deflections due to microlensing. Fortunately, the proper motions are linear whereas the deflections due to microlensing are not, but it is clearly important to accurately subtract the proper motions. The time baseline of our observations is inadequate for 4 of the 5 microlensing events that we are monitoring, since the expected lensing signal was substantial until now. We have completed observations for one, but need 2 additional observations each for the 4 remaining events in order to accurately determine their proper motions. This will lead to a robust determination of the lens masses, thus completing the original objectives of the program.

OBSERVING DESCRIPTION

We will continue our observations of long-duration events which do not show any light contribution from the lens (continuation of 11707/12322/12670). We will take most images in a single filter, but also take a small number of images in a different filter to check the color dependenacy, if any, of the astrometric shift.

We will try to take as many images as possible in a single ORIENT for better astrometric accuracy. However, maintaining a single ORIENT may not be possible for all the observations. Since almost all of our targets are close to the ecliptic, we plan to use the same orient for nearly half of the year, and then flip it by 180 deg.

Visit

Proposal 13458, Visit 01, completed Thu Oct 09 01:01:20 GMT 2014

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 270D TO 290 D; BETWEEN 01-JUN-2013 AND 18-JUN-2013

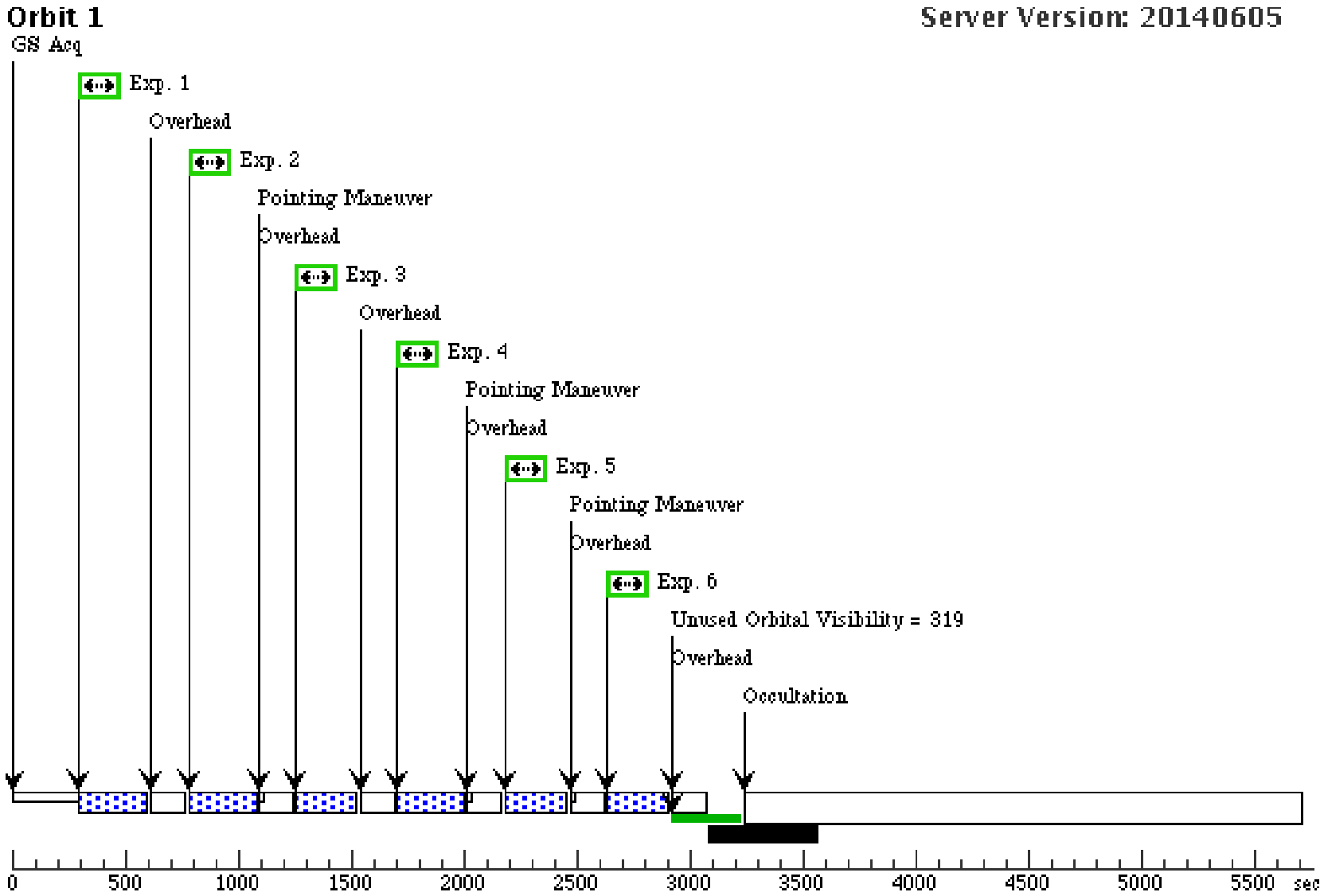
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(7)	MOA-2009-BLG-260	RA: 17 58 28.5700 (269.6190417d) Dec: -26 50 21.09 (-26.83919d) Equinox: J2000		V=16.61+/-1.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(7) MOA-2009-BLG-260	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	CR-SPLIT=NO	POS TARG 22.25,9		275 Secs (275 Secs) *[==>]*	 ***[1]***
2		(7) MOA-2009-BLG-260	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	CR-SPLIT=NO	SAME POS AS 1		275 Secs (275 Secs) *[==>]*	 ***[1]***
3		(7) MOA-2009-BLG-260	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	CR-SPLIT=NO	POS TARG 10.37,20.85		275 Secs (275 Secs) *[==>]*	 ***[1]***
4		(7) MOA-2009-BLG-260	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	CR-SPLIT=NO	POS TARG 10.37,20.85		275 Secs (275 Secs) *[==>]*	 ***[1]***
5		(7) MOA-2009-BLG-260	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	CR-SPLIT=NO	POS TARG -1.45,8.95		275 Secs (275 Secs) *[==>]*	 ***[1]***
6		(7) MOA-2009-BLG-260	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	CR-SPLIT=NO	POS TARG 10.48,-2.85		275 Secs (275 Secs) *[==>]*	 ***[1]***

Orbit Structure



Visit

Proposal 13458, Visit 02, completed Thu Oct 09 01:01:21 GMT 2014

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: BETWEEN 01-FEB-2013:00:00:00 AND 24-OCT-2013; VISIBILITY INTERVAL 58 M

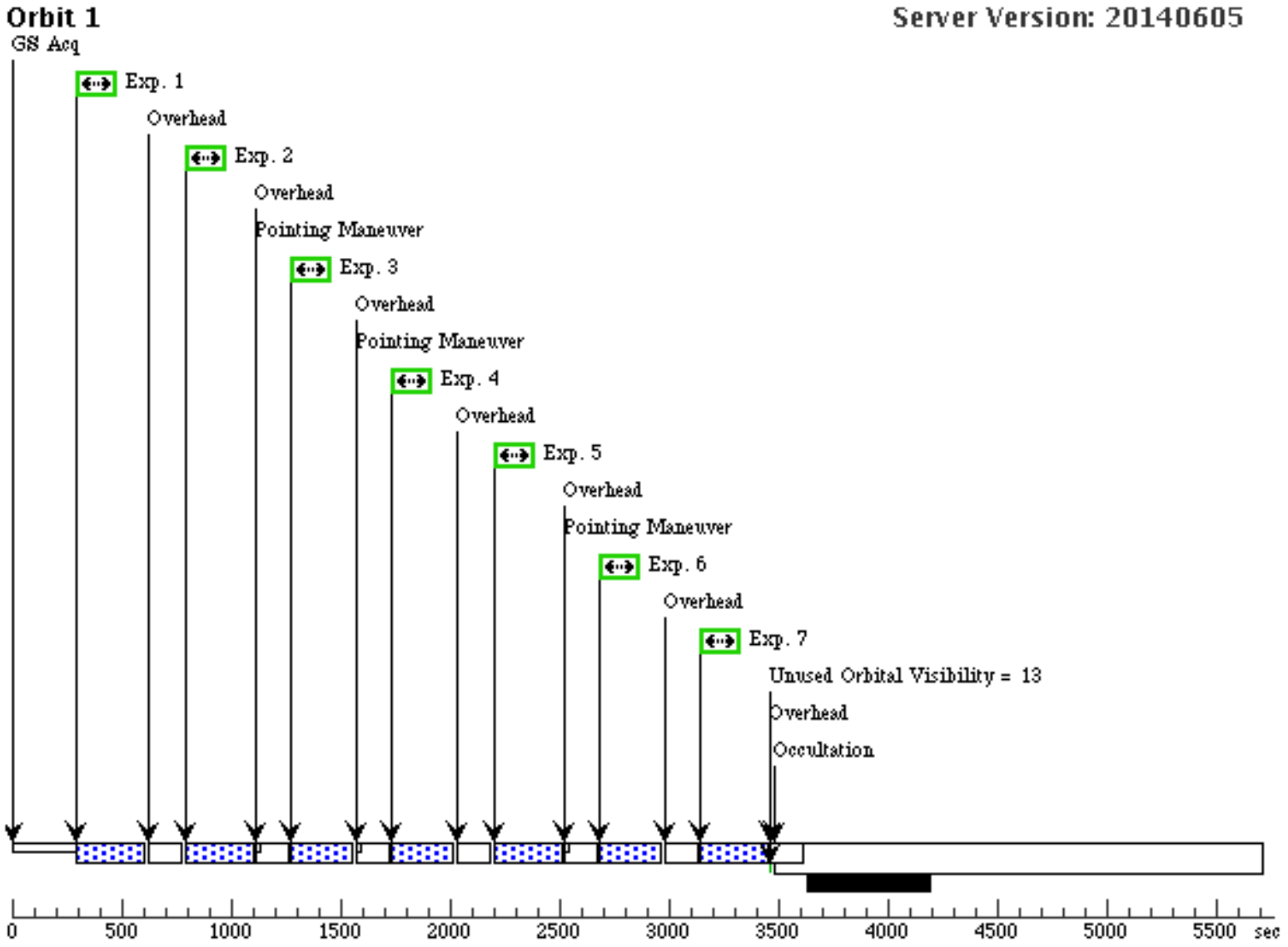
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	OGLE-2011-BLG-462	RA: 17 51 40.1900 (267.9174583d) Dec: -29 53 26.30 (-29.89064d) Equinox: J2000		V=20.25	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(4) OGLE-2011-BLG-462	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	CR-SPLIT=NO	POS TARG 22.25,9		285 Secs (285 Secs) *[==>]*	*[1]*
2		(4) OGLE-2011-BLG-462	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	CR-SPLIT=NO	SAME POS AS 1		285 Secs (285 Secs) *[==>]*	*[1]*
3		(4) OGLE-2011-BLG-462	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	CR-SPLIT=NO	POS TARG 10.37,20.85		285 Secs (285 Secs) *[==>]*	*[1]*
4		(4) OGLE-2011-BLG-462	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	CR-SPLIT=NO	POS TARG -1.45,8.95		285 Secs (285 Secs) *[==>]*	*[1]*
5		(4) OGLE-2011-BLG-462	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	CR-SPLIT=NO	POS TARG -1.45,8.95		285 Secs (285 Secs) *[==>]*	*[1]*
6		(4) OGLE-2011-BLG-462	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	CR-SPLIT=NO	POS TARG 10.48,-2.85		285 Secs (285 Secs) *[==>]*	*[1]*
7		(4) OGLE-2011-BLG-462	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	CR-SPLIT=NO	SAME POS AS 6		285 Secs (285 Secs) *[==>]*	*[1]*

Orbit Structure



Visit

Proposal 13458, Visit 03, completed Thu Oct 09 01:01:21 GMT 2014

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: BETWEEN 05-SEP-2013 AND 25-OCT-2013; VISIBILITY INTERVAL 58 M

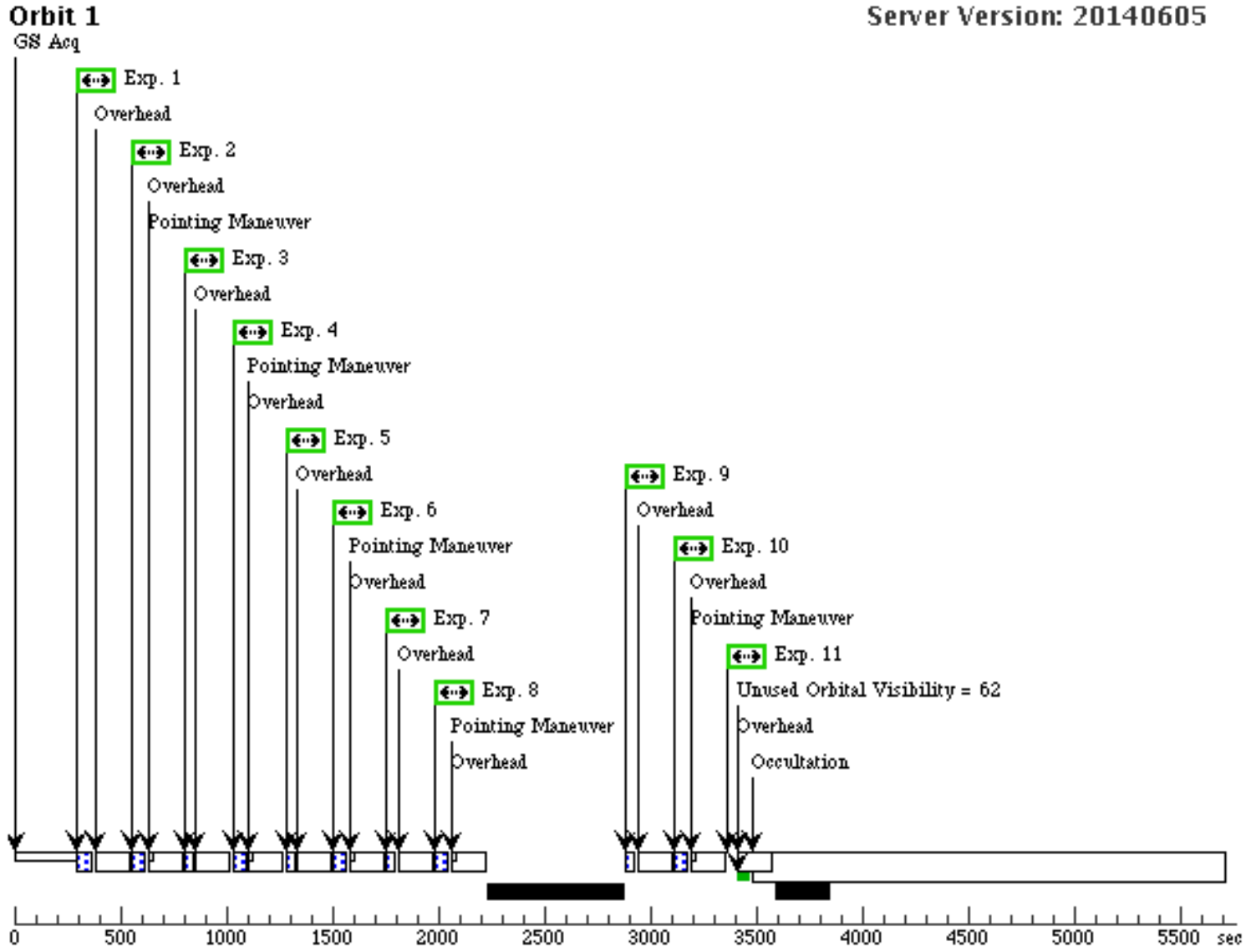
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(5)	MOA-2010-BLG-364	RA: 17 57 5.3800 (269.2724167d) Dec: -34 27 5.00 (-34.45139d) Equinox: J2000		V=17+/-0.1	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(5) MOA-2010-BLG-364	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	FLASH=10	POS TARG 10.4,9.0		40 Secs (40 Secs) *[==>]*	 ***[1]***
2		(5) MOA-2010-BLG-364	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	FLASH=10	SAME POS AS 1		40 Secs (40 Secs) *[==>]*	 ***[1]***
3		(5) MOA-2010-BLG-364	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	FLASH=10	POS TARG 22.25,9.0		40 Secs (40 Secs) *[==>]*	 ***[1]***
4		(5) MOA-2010-BLG-364	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	FLASH=10	SAME POS AS 3		40 Secs (40 Secs) *[==>]*	 ***[1]***
5		(5) MOA-2010-BLG-364	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	FLASH=10	POS TARG 16.31,19.27		40 Secs (40 Secs) *[==>]*	 ***[1]***
6		(5) MOA-2010-BLG-364	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	FLASH=10	SAME POS AS 5		40 Secs (40 Secs) *[==>]*	 ***[1]***
7		(5) MOA-2010-BLG-364	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	FLASH=10	POS TARG 4.45,19.25		40 Secs (40 Secs) *[==>]*	 ***[1]***
8		(5) MOA-2010-BLG-364	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	FLASH=10	SAME POS AS 7		40 Secs (40 Secs) *[==>]*	 ***[1]***
9		(5) MOA-2010-BLG-364	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	FLASH=10	POS TARG -1.45,8.95		40 Secs (40 Secs) *[==>]*	 ***[1]***
10		(5) MOA-2010-BLG-364	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	FLASH=10	SAME POS AS 9		40 Secs (40 Secs) *[==>]*	 ***[1]***
11		(5) MOA-2010-BLG-364	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	FLASH=10	POS TARG 4.53,-1.30		40 Secs (40 Secs) *[==>]*	 ***[1]***

Orbit Structure



Visit

Proposal 13458, Visit 04, completed Thu Oct 09 01:01:21 GMT 2014

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: BETWEEN 15-OCT-2013:00:00:00 AND 25-OCT-2013:00:00:00; VISIBILITY INTERVAL 58 M

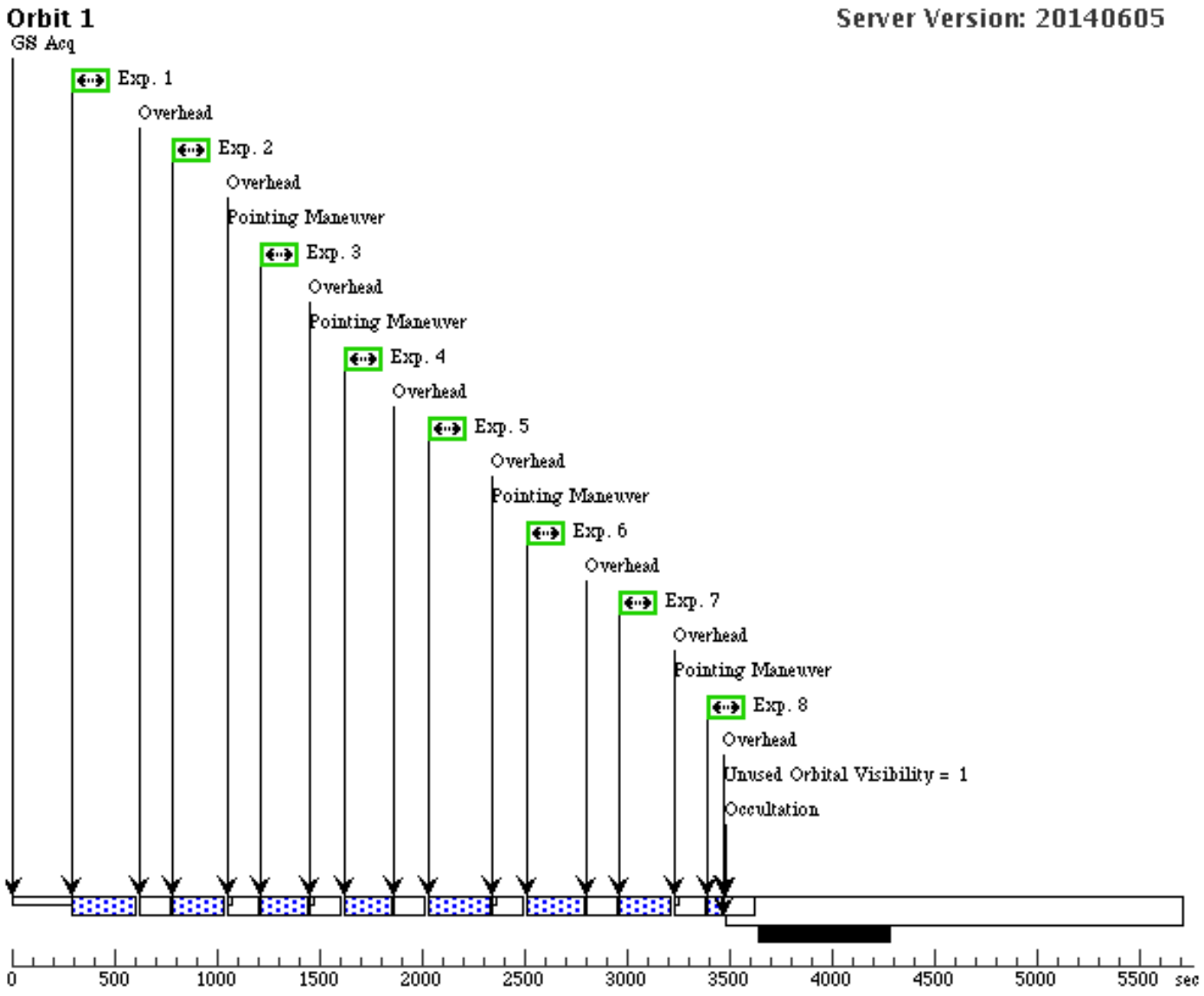
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	OGLE-2011-BLG-310	RA: 17 51 25.3900 (267.8557917d) Dec: -30 24 35.00 (-30.40972d) Equinox: J2000		V=18	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(3) OGLE-2011-BLG-310	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	CR-SPLIT=NO	POS TARG 22.25,9		280 Secs (280 Secs) *[==>]*	*[1]*
2		(3) OGLE-2011-BLG-310	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	CR-SPLIT=NO	SAME POS AS 1		230 Secs (230 Secs) *[==>]*	*[1]*
3		(3) OGLE-2011-BLG-310	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	CR-SPLIT=NO	POS TARG 10.37,20.85		230 Secs (230 Secs) *[==>]*	*[1]*
4		(3) OGLE-2011-BLG-310	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	CR-SPLIT=NO	POS TARG -1.45,8.95		230 Secs (230 Secs) *[==>]*	*[1]*
5		(3) OGLE-2011-BLG-310	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	CR-SPLIT=NO	POS TARG -1.45,8.95		280 Secs (280 Secs) *[==>]*	*[1]*
6		(3) OGLE-2011-BLG-310	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	CR-SPLIT=NO	POS TARG 10.48,-2.85		280 Secs (280 Secs) *[==>]*	*[1]*
7		(3) OGLE-2011-BLG-310	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	CR-SPLIT=NO	SAME POS AS 6		230 Secs (230 Secs) *[==>]*	*[1]*
8		(3) OGLE-2011-BLG-310	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	CR-SPLIT=NO	POS TARG 10.4,9		68 Secs (68 Secs) *[==>]*	*[1]*

Orbit Structure



Visit

Proposal 13458, Visit 05, completed Thu Oct 09 01:01:22 GMT 2014

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: BETWEEN 01-OCT-2013 AND 25-OCT-2013; VISIBILITY INTERVAL 58 M

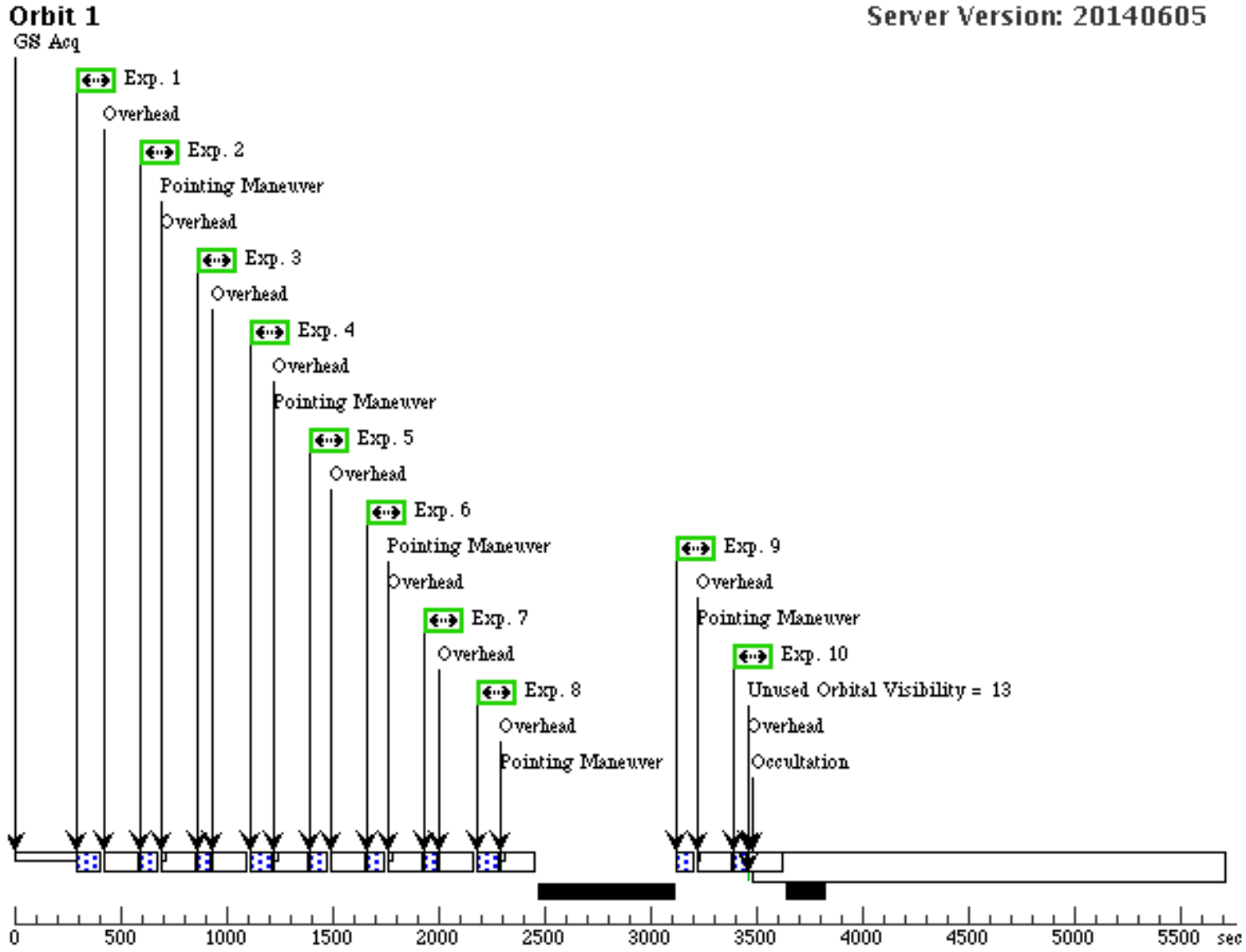
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(8)	OGLE-2011-BLG-0037	RA: 17 55 55.8300 (268.9826250d) Dec: -30 33 39.70 (-30.56103d) Equinox: J2000		V=17.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(8) OGLE-2011-BLG-0037	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	FLASH=6	POS TARG 10.4,9.0		80 Secs (80 Secs) *[==>]*	*[1]*
2		(8) OGLE-2011-BLG-0037	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	FLASH=8	SAME POS AS 1		60 Secs (60 Secs) *[==>]*	*[1]*
3		(8) OGLE-2011-BLG-0037	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	FLASH=8	POS TARG 22.25,9.0		60 Secs (60 Secs) *[==>]*	*[1]*
4		(8) OGLE-2011-BLG-0037	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	FLASH=6	SAME POS AS 3		80 Secs (80 Secs) *[==>]*	*[1]*
5		(8) OGLE-2011-BLG-0037	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	FLASH=6	POS TARG 16.31,19.27		80 Secs (80 Secs) *[==>]*	*[1]*
6		(8) OGLE-2011-BLG-0037	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	FLASH=8	SAME POS AS 5		60 Secs (60 Secs) *[==>]*	*[1]*
7		(8) OGLE-2011-BLG-0037	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	FLASH=8	POS TARG 4.45,19.25		60 Secs (60 Secs) *[==>]*	*[1]*
8		(8) OGLE-2011-BLG-0037	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	FLASH=6	SAME POS AS 7		80 Secs (80 Secs) *[==>]*	*[1]*
9		(8) OGLE-2011-BLG-0037	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	FLASH=8	POS TARG -1.45,8.95		60 Secs (60 Secs) *[==>]*	*[1]*
10		(8) OGLE-2011-BLG-0037	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	FLASH=8	POS TARG -1.45,5		60 Secs (60 Secs) *[==>]*	*[1]*

Orbit Structure



Visit

Proposal 13458, Visit 06, implementation Thu Oct 09 01:01:22 GMT 2014

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: BETWEEN 01-OCT-2014 AND 24-DEC-2014; VISIBILITY INTERVAL 56 M

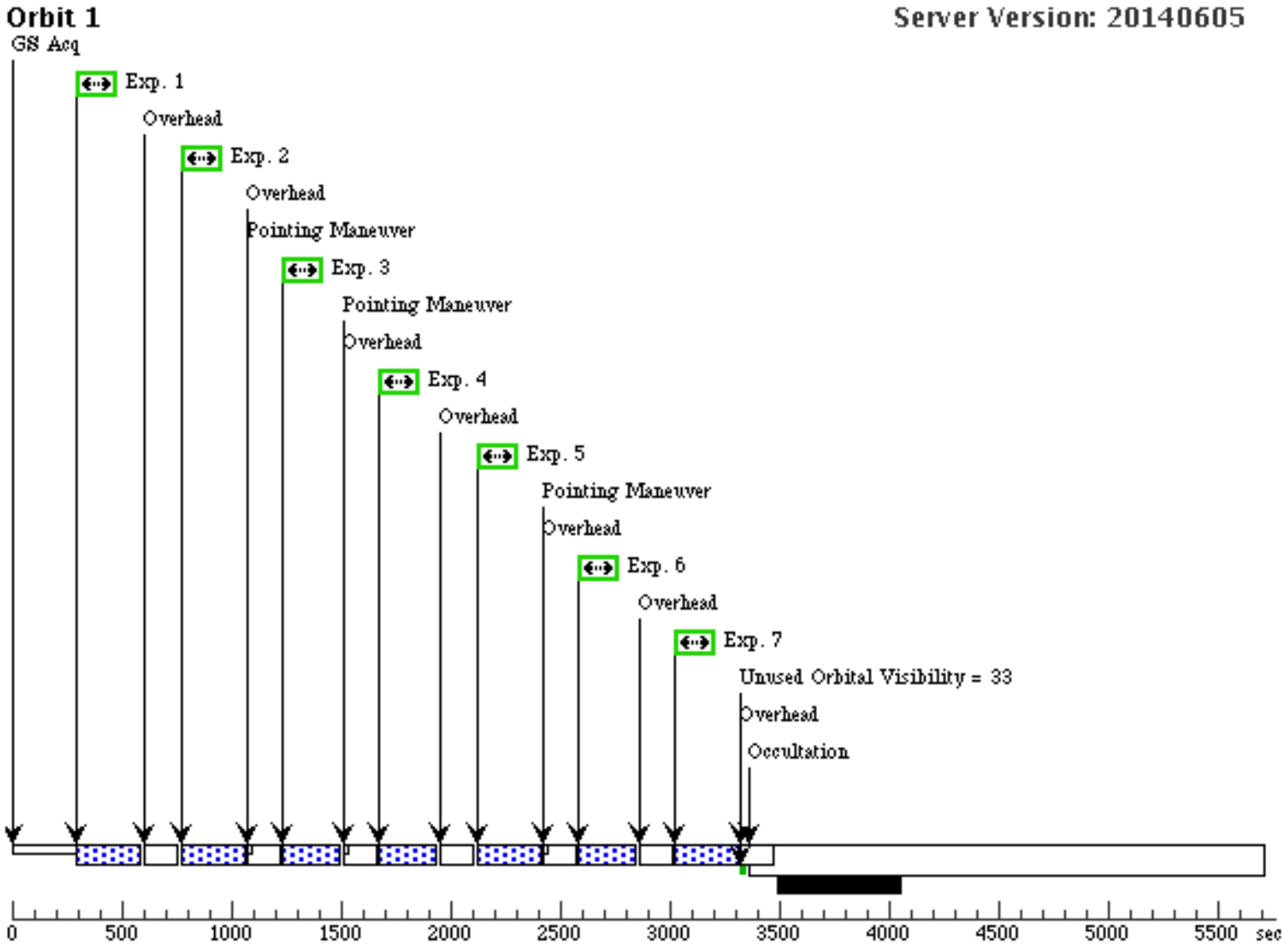
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	OGLE-2011-BLG-462	RA: 17 51 40.1900 (267.9174583d) Dec: -29 53 26.30 (-29.89064d) Equinox: J2000		V=20.25	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(4) OGLE-2011-BLG-462	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	CR-SPLIT=NO	POS TARG 22.25,9		265 Secs (265 Secs) *[==>]*	*[1]*
2		(4) OGLE-2011-BLG-462	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	CR-SPLIT=NO	SAME POS AS 1		265 Secs (265 Secs) *[==>]*	*[1]*
3		(4) OGLE-2011-BLG-462	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	CR-SPLIT=NO	POS TARG 10.37,20.85		265 Secs (265 Secs) *[==>]*	*[1]*
4		(4) OGLE-2011-BLG-462	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	CR-SPLIT=NO	POS TARG -1.45,8.95		265 Secs (265 Secs) *[==>]*	*[1]*
5		(4) OGLE-2011-BLG-462	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	CR-SPLIT=NO	POS TARG -1.45,8.95		265 Secs (265 Secs) *[==>]*	*[1]*
6		(4) OGLE-2011-BLG-462	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	CR-SPLIT=NO	POS TARG 10.48,-2.85		265 Secs (265 Secs) *[==>]*	*[1]*
7		(4) OGLE-2011-BLG-462	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	CR-SPLIT=NO	SAME POS AS 6		265 Secs (265 Secs) *[==>]*	*[1]*

Orbit Structure



Visit

Proposal 13458, Visit 07, implementation Thu Oct 09 01:01:22 GMT 2014

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: BETWEEN 01-OCT-2014 AND 05-NOV-2014; VISIBILITY INTERVAL 56 M

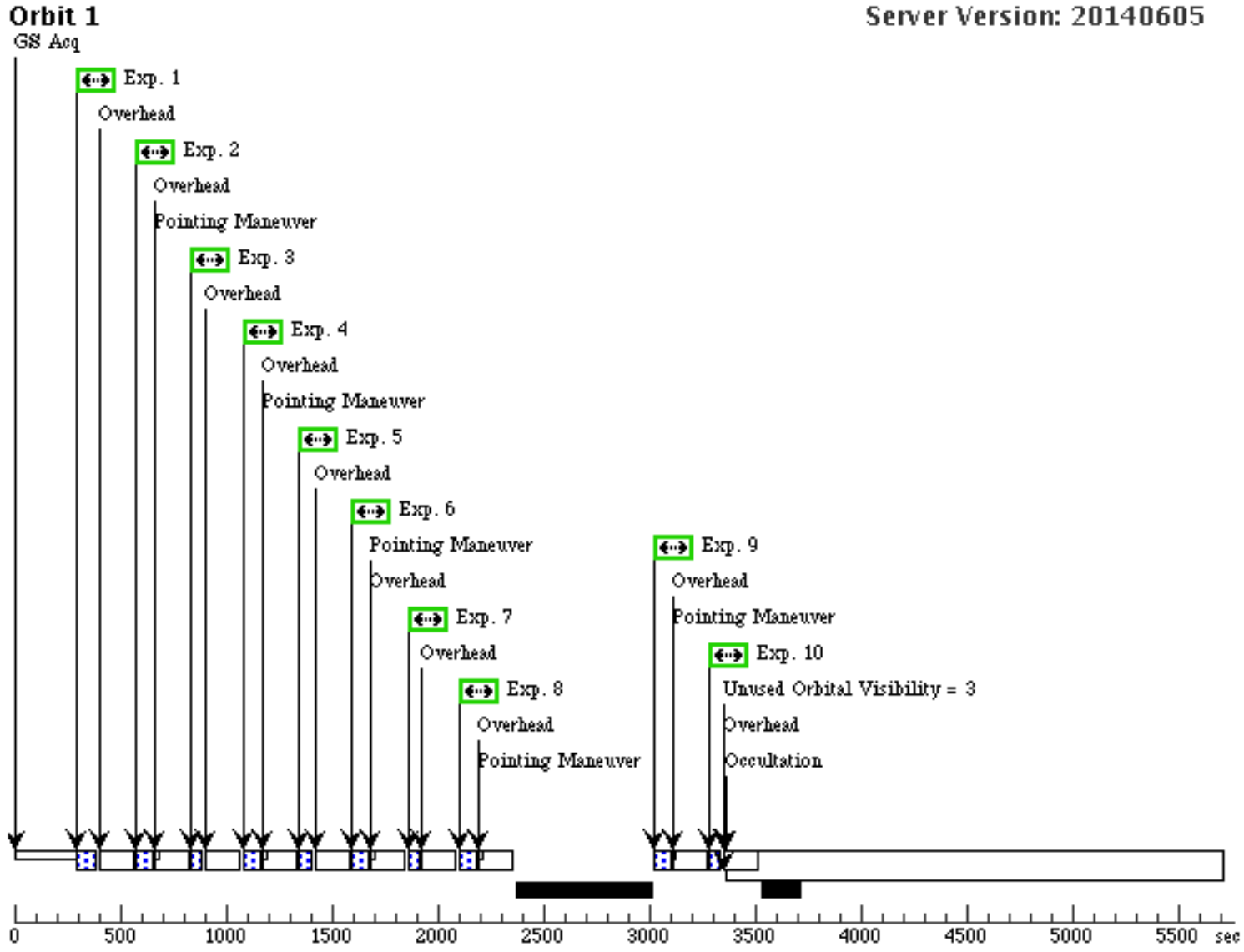
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(8)	OGLE-2011-BLG-0037	RA: 17 55 55.8300 (268.9826250d) Dec: -30 33 39.70 (-30.56103d) Equinox: J2000		V=17.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(8) OGLE-2011-BLG-0037	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	FLASH=7	POS TARG 10.4,9.0		60 Secs (60 Secs) *[==>]*	*[1]*
2		(8) OGLE-2011-BLG-0037	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	FLASH=9	SAME POS AS 1		55 Secs (55 Secs) *[==>]*	*[1]*
3		(8) OGLE-2011-BLG-0037	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	FLASH=9	POS TARG 22.25,9.0		55 Secs (55 Secs) *[==>]*	*[1]*
4		(8) OGLE-2011-BLG-0037	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	FLASH=7	SAME POS AS 3		60 Secs (60 Secs) *[==>]*	*[1]*
5		(8) OGLE-2011-BLG-0037	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	FLASH=7	POS TARG 16.31,19.27		60 Secs (60 Secs) *[==>]*	*[1]*
6		(8) OGLE-2011-BLG-0037	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	FLASH=9	SAME POS AS 5		55 Secs (55 Secs) *[==>]*	*[1]*
7		(8) OGLE-2011-BLG-0037	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	FLASH=9	POS TARG 4.45,19.25		55 Secs (55 Secs) *[==>]*	*[1]*
8		(8) OGLE-2011-BLG-0037	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	FLASH=7	SAME POS AS 7		60 Secs (60 Secs) *[==>]*	*[1]*
9		(8) OGLE-2011-BLG-0037	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	FLASH=9	POS TARG -1.45,8.95		55 Secs (55 Secs) *[==>]*	*[1]*
10		(8) OGLE-2011-BLG-0037	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	FLASH=9	POS TARG -1.45,5		55 Secs (55 Secs) *[==>]*	*[1]*

Orbit Structure



Visit

Proposal 13458, Visit 08 Thu Oct 09 01:01:22 GMT 2014

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: BETWEEN 15-OCT-2014:00:00:00 AND 15-NOV-2014:00:00:00; VISIBILITY INTERVAL 56 M

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	OGLE-2011-BLG-310	RA: 17 51 25.3900 (267.8557917d) Dec: -30 24 35.00 (-30.40972d) Equinox: J2000		V=18	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(3) OGLE-2011-BLG-310	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	CR-SPLIT=NO	POS TARG 22.25,9		263 Secs (263 Secs) *[==>]*	*[1]*
2		(3) OGLE-2011-BLG-310	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	CR-SPLIT=NO	SAME POS AS 1		213 Secs (213 Secs) *[==>]*	*[1]*
3		(3) OGLE-2011-BLG-310	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	CR-SPLIT=NO	POS TARG 10.37,20.85		213 Secs (213 Secs) *[==>]*	*[1]*
4		(3) OGLE-2011-BLG-310	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	CR-SPLIT=NO	POS TARG -1.45,8.95		213 Secs (213 Secs) *[==>]*	*[1]*
5		(3) OGLE-2011-BLG-310	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	CR-SPLIT=NO	POS TARG -1.45,8.95		263 Secs (263 Secs) *[==>]*	*[1]*
6		(3) OGLE-2011-BLG-310	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F606W	CR-SPLIT=NO	POS TARG 10.48,-2.85		263 Secs (263 Secs) *[==>]*	*[1]*
7		(3) OGLE-2011-BLG-310	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	CR-SPLIT=NO	SAME POS AS 6		213 Secs (213 Secs) *[==>]*	*[1]*
8		(3) OGLE-2011-BLG-310	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F814W	CR-SPLIT=NO; FLASH=8	POS TARG 10.4,9		68 Secs (68 Secs) *[==>]*	*[1]*

Orbit Structure